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STRUCTURE AND RELATIONSHIPS OF STANDARD ENVIRONMENTAL,
PERSONALITY AND ABILITY FACTORS IN
SECONDARY SCHOOL ADOLESCENTS

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of the requirements for the degree of
Doctor of Philosophy in Education
at Massey University

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1972

ABSTRACT

Over 2,000 pupils of two state coeducational secondary schools and five single-sex private secondary schools in the same New Zealand town completed aptitude tests, and questionnaires on family background, attitudes, interests, affective states, adjustment, personality, beliefs and occupational preferences. Responses were subjected to descriptive analysis and were factor analyzed and regression analyses were carried out on dominant intellectual and non-intellectual variables. Higher socio-economic status was associated with more pre-school education, more private school education, less mother employment, less father absence, greater continuance at school, less delinquency, more parental pressure to succeed in school, more regular going out with parents, more positive family climate, more positive attitudes to teachers and higher primary school reading and arithmetic levels. Lower class was characterized by greater father absence, large families, less parental concern about school success, less family outings, deficient family climate, lower primary school reading and arithmetic levels, more negative views of how teachers regarded them, lower expectation of opportunity, and lower self-rating of happiness. Factor analyses produced six factors of the structural variables of home environment, five factors of parental child-rearing practices, eight factors of family relations, three intellectual factors, ten non-intellectual factors.

Coefficients of multiple determination showed that home environment predictors of language aptitude and average attainment were father's education, smaller family, parental attitudes against smoking, parental expectation of household duties by adolescent, low parental anger-rejection, high father-permissiveness. Personality predictors of aptitude and attainment were general ability, adjustment to reality, scientific preference, sociability, less practical preference, more perceived favourability with teachers, and greater sensitivity. Joint effects of intellectual, home environment and personality predictors were almost as great as the independent effects of intellectual predictors. Joint effects of intellectual, home environment, and personality predictors were half of the total multiple prediction of conformity problems and about equal to those of personality predictors. High ability pupils were found to be more influenced than others in aptitude by home environment factors. Males were more influenced than females by mother support and by extrinsic motives. Lower ability and lower socio-economic level pupils were more influenced by intellectual factors than by home environment. It was concluded that the home environment factors could be examined as a possible focus of experimental programmes aimed at enhancing adolescent adjustment and attainment.

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Chapter 1

THE PURPOSE OF THE STUDY

A great deal of recent study has been concerned with the effect of environmental and social climate factors on individual outcomes of education.

For various reasons, most studies have failed to take into account the complex nature of educational outcomes. Those outcomes such as mathematics attainment or average academic attainment which are the kind most commonly used as criteria are assumed to be the major concern. Furthermore, in most studies, the interrelatedness of outcomes is seldom taken into consideration. Consequently, the selection of outcome variables tends to be rather hastily undertaken and their definition insufficiently established.

Similar observations obtain in regard to the antecedent and environmental factors which are taken as influencing the outcomes. It is seldom clear, except that one or other previous researcher has done so, why workers in the field have assumed a particular predictor or independent variable to be influential. This writer believes that the problem as stated calls for two stages of study: first the examination of underlying dimensions of both outcomes and the factors influencing them; second, the investigation of the relative and cumulative influence of predictors on outcomes, using as research variables those which are most representative of the major dimensions.

The implication which first arises is a methodological one which will be discussed in a later section, viz. that a range of potentially relevant variables representing any outcome(s) or predictor(s) under study should be incorporated in the design, so as to enable analyses to provide an empirical answer to the question, 'What is the leading feature of this set of outcomes, or of this set of predictors?'

The second implication is that a wider net must be cast in the attempt to do more justice to the question, 'What kinds of outcome are, in actual fact, being produced, and what extension of the range of predictors is called for in order to understand them?'

In the study of environmental influences on educational outcomes the areas of concern are those embraced within the concept 'socialization'. In general terms, socialization is both cognitive and socio-emotional. Practical expressions of cognitive socialization are roughly defined in those outcomes of education known as academic or intellectual. Socio-emotional manifestations of socialization are social behaviours, attitudes,

affective states and personality traits. Both cognitive and socio-emotional phenomena have relatively poorly understood genetic components. Again the cognitive and the socio-emotional are in complex but poorly understood ways related to each other. How far these relationships can be attributed to the genetic personality complex and how much to socialization influences is a question that this investigation will not attempt to answer. The factor of genetic influence must be considered, however, in any attempt to provide explanation or predictions of phenotypic manifestations.

In the social context the issue of environmental factors influencing educational outcomes is one that is receiving world-wide attention. Whether seen as a problem of underdeveloped countries or as the injustice suffered by disadvantaged sectors of a developed society, the study of environmental factors has vast social, economic and psychological ramifications. Specifically, there is a great need for knowledge of the contribution of extra-instructional factors to explanation of outcomes so that practicable measures may be developed for the compensation of the disadvantaged. Additionally there is a need to fill out the gaps in our knowledge of the other outcomes of our education-socialization processes outside of the formal academic ones. While it is recognized everywhere that pupils vary on, say, mathematical attainment, there is disproportionate systematic attention given to this outcome as against the variability of anxiety or social adjustment. And yet it can easily be argued that these non-intellective outcomes are of more general importance to society than the ability to solve an equation.

Even in countries such as Great Britain and the United States of America in which a great deal of research has been carried out to provide knowledge of environmental influences on educational outcomes, there is surprisingly little strategy directed toward effective implementation of such knowledge in terms of remedial action. There is much waste of material resources; there is little operational policy that takes account of dominant environmental influences so as to produce desirable outcomes with maximal efficiency. That this is even more so in New Zealand and Australia is inevitable in view of the lack of comprehensive investigations of the inter-relationships between social environment, family background, personality, attitudes and attainment.

The present study was undertaken to answer the general question: 'What are the inter-relationships of environmental factors and educational outcomes?'

Ancillary questions were:

1. What are the dominant features of environmental factors?
2. What are the dominant features of intellective outcomes?

3. What are the dominant features of non-intellective outcomes?
4. What are the relationships of environmental factors and intellective outcomes?
5. What are the relationships of environmental factors and non-intellective outcomes?
6. To what degree can outcomes be predicted from environmental properties and pupil characteristics?
7. What is the composite structure of environmental, non-intellective and intellective variables in school pupils?
8. What is the composite structure of non-intellective and intellective variables in school pupils?

The investigation took as its starting point the wide range of research on the categories of variables referred to above and sought to bring these together so as to create multivariate knowledge out of what in many cases are isolated and bivariate findings existing in vacuo as regards context and correlates.

Chapter 2

A REVIEW OF RELATED LITERATURE

In the most recent Gallup Poll of public attitudes toward education in the U.S.A. (Gallup, 1972) it is noted that responses to the question "In what ways are the local public schools particularly good?" are "almost never stated in terms of . . . the product itself - the graduate. Even professional educators are unlikely to judge the school by results." The assumption seems to be that if facilities, methods, personnel and curricula meet agreed standards, then the quality of the outcomes of schooling may be taken largely for granted.

The focus of the present survey of research will be upon pupil outcomes. It is assumed that empirical demonstration of effects is the best indicator of what contextual, environmental and psychological factors are worth considering. The purpose of the review is to demonstrate the relevance of the variables and the timeliness and appropriateness of the methods used in this study. Since a great amount of material has been studied, some economy of presentation is necessary. Accordingly there will be a minimum of discussion throughout the following report of an extensive library search on the research problem.

The General Family Environment

In this section I discuss those studies which have assessed the influence of the social context of the family upon aspects of the development of secondary school pupils. Three major areas of general family environment were more or less extensively reported in the literature. These were influences of social class, rural-urban location and cultural-ethnic memberships.

A prior question in the consideration of the social context of the family is the current functioning of the family itself as a social system. The popular theory is that the family has undergone change such that it is no longer a dependable socializing or supporting system in modern society. In a recent study, Webster^(1972a) ~~(1972)~~ has reported the continued stability of the kinship system in New Zealand society. Relevant details concerning a random stratified sample of 133 intact marriages in a recognized representative provincial city in New Zealand were as follows: Seven out of ten families were in houses of medium size and average condition built since World War II, or better than that description. Half had one motor vehicle; one in three had two vehicles. Predominant educational level

of husbands was less than complete secondary.* Average number of children was 2.7. 79% of husbands and 92% of wives rated themselves satisfied or very satisfied with their family life. When husbands rated their work satisfaction, 40% of husbands in young marriages rated themselves high, as against 29% in middle marriage and 11% in older marriages. High ratings on family satisfaction were recorded by 45% of husbands in young marriages, 32% in middle marriages and 15% of older marriages.

The central question in Webster's study was whether the kinship system had broken up into nuclear isolated units. While in one sense - the percentage of relatives in the total kin system contacted personally in the past year - there was not a high degree of contact (22%), yet when first-order kin alone were considered, a quite high degree of contact (about 70%) was reported. No differences in the tendency to be in contact with kin were found according to social class, religion, occupational stability, promotion, death of a parent, size of family, amount of social activity, encouragement of mobility by relatives, or number of cars. The only independent factor influencing the degree of kin contact was the degree of upward occupational mobility of the husband compared with his father's occupational level when Subject was 16 years of age. By this test it was found that the non-mobile averaged 71% contact with first-order relatives while the mobile averaged 52%.

While Webster concluded:

"the fact that family kinship remains a powerful force in New Zealand society (indicates) that any efforts to ameliorate social conditions on a broader scale must reckon on the vitality and potential adaptability of the family, not on its pending dissolution", (*ibid.*, p12) nevertheless for the present study there is a section of the findings which relates to the influence of the family on attitudes to education and opportunity. People who had over their marriage years gone down in their occupational level were found to report consistently lower family encouragement of mobility and less constructive attitudes of family to training, education and job satisfaction. Those who reported their close kin as having constructive attitudes in these terms had higher income, higher education, and higher satisfaction with family life. Those whose families had higher occupations were very much more likely to report their close relatives as encouraging them to move within New Zealand or overseas when opportunity arose. These people saw their kin less, but reported a higher sense of obligation to contact them, and had higher satisfaction with family life.

Essentially these findings serve to confirm, for purposes of the present study, that the New Zealand family is an organized supportive

*i.e. the pupil responded affirmatively to the item "some secondary school" but not to the item "completed secondary school".

social system which facilitates the socially advantaged more than others in their use of the social opportunity system.

Against this background of kin system function the general family environment may be more usefully appraised.

Social class influences. The most highly general problem is commonly agreed to be the development of language in disadvantaged children who live in a non-verbal world. (Kennedy, 1971, pp 150-152)

But behind the problem of individual children is the social organization complex embraced by the term 'social class'. This is the most inclusive structural concept for the existential framework within which individual children's development may be investigated. Bachman et al (1968) exemplifies the dimensions of socio-economic level when he explains the development of a summary measure of socio-economic status:

" . . there is no broad agreement about just what is meant by the terms socio-economic status and socio-economic level . . . In summary (our) measure consists of one 'part' father's occupational status, two 'parts' parents' education, and three 'parts' to do with family possessions. While most or all of these ingredients undoubtedly have a bearing upon a family's status in the eyes of the community, they have perhaps even more to do with the quality of home environment available to children. To the extent that this is true, the SEL index is particularly well suited as a measure of one class of family background influence in our study of adolescent boys." (p14)

Bachman started with 10 potentially relevant variables and concluded that a weighted sum from the three categories quoted above was best. The resulting measure applied to a nationwide sample of 10th grade boys in the U.S.A. related clearly and positively to I.Q. scores, occupational aspiration, educational plans and, at a weaker level, to perceived control over the environment. (1968, pp 2.1 - 2.16)

Such studies have a history in classic discoveries of the effect of deprivation on intelligence. (Gordon, 1923; Sherman and Key, 1932; Wheeler, 1932, 1942; Asher, 1935; Skeels and Fillmore, 1937). These all agree generally with the conclusion reached by Sherman and Keys:

"The only plausible explanation of the increasing difference with increasing age is that children develop only as the environment demands development." (1932, p289)

Thirty years after the period of the above studies, Kennedy, Van De Riet and White obtained a normative sample of intelligence and achievement of Negro elementary school children in the Southeastern United States, and reported systematic relationships of environments to these outcomes. For metropolitan, urban and rural the mean I.Q. scores were 84, 79 and 79, while in the total sample there was a pronounced relationship of I.Q. with socio-economic level. (1963, p78)

Many studies of the last decade or so have added detail to the picture of educational and developmental effects of lower social class and disadvantage. Lueptow (1963) argued from a review of social psychological theory concerning the school life of the disadvantaged that the basic problem is conflict arising from the demand upon the lower-class child to adjust to the expectations of middle-class society. He further argues that the academic functioning of the disadvantaged child reflects an inability to become involved in schooling rather than a lack of will. Lueptow concludes that schools are faced with two alternatives: to concentrate on the strengths of the primary socialization pattern of the poor, or to adopt re-socialization techniques aimed at educating the poor toward the middle class.

Further general effects of social class have been observed by Bachman (1970), Gerrard (1967), Harrison (1969) and Flanagan (1969). Bachman, in a national longitudinal study of about 2,200 10th grade American boys in public schools investigated family background factors in relation to abilities, personality, character, behaviour and plans for the future. He and his Michigan co-workers found that socio-economic level is apparently the most important of the family background measures, and that family background factors influence both functional intelligence and such practical matters as job information. Gerrard distinguished the "upwardly mobile" and the "stationary" poor and concluded that it is not socio-economic class as such but social competence that defeats the poor. Harrison found that socio-economic status and school performance interacted to depress both real and ideal aspirations of the disadvantaged. The proportion of the school population of the U.S.A. affected by relative poverty is indicated by Flanagan's (1969) report in the *Encyclopaedia of Educational Research* showing that

"only about 6 percent of secondary school students' fathers are in professional occupations and only about one third would be classified as being in white-collar jobs. About an additional one-third are in skilled occupations, with the remaining one-third being occupied in semi-skilled and unskilled work." (1969, 1330).

Other opinion generally forecasts an increase from the present one-third to one-half in the disadvantaged sector of the American school population. To the extent that these figures are comparable to the New Zealand situation it is fair to say that a very serious problem of educational strategy confronts those who would see schools as responsible to disconfirm predictions based on social inequalities.

The range of predictions amassed is staggering. Assuming educational attainment as the most prominent index of social status, the generalization

may be made that the consequences of school achievement are in large part the consequences of social class. Levin et al. (1971), in reviewing the relationships of educational attainment and success in later life concluded:

"Educational attainment and opportunity are linked in many ways. Abundant evidence supports the view that education affects income, occupational choice, social and economic mobility, political participation, social deviance, etc. Indeed, educational attainment is related to opportunity in so many ways that the two seem inextricably intertwined in the mind of the layman, and in the findings of the social scientist. . . The evidence is overwhelmingly in support of the proposition that the post-school opportunity and performance of a pupil are related directly to his educational attainment." (p14)

Specifically, Levin and his associates found educational level related to higher earnings, higher occupational achievement, higher mobility of children of educated people, higher exercise of political rights, lower delinquency, greater options in post school education, less likelihood to be assigned menial tasks and front-line combat in the forces, better mental health and greater geographic mobility in the interests of opportunity.

Of course, social class does not have a monolithic character. Its effects interact with race, sex and urbanization. Larson and Slocum (1969) studying rural secondary students in Washington state found that low income related to poorer academic, social and personality attributes. Seidel (1970) found that two samples of matched pairs of 10th, 11th and 12th grade students in two Appalachian communities geographically near but culturally divergent, differed so much in family life, employment, entertainment, peer groups, religion, education, vocational ambition, optimism and satisfaction with living conditions that they were impelled to propose that different curricula should be developed to suit the two populations. Okada (1969) in a USOE study of growth in achievement for different racial, regional and socio-economic groupings of secondary students found that socio-economic status is assuming increasing importance for all students, but that race is associated with social class so that high SES Negroes have a lower achievement than low SES whites. Parent education is implicated in these results. Marchiony (1970) studied the inter-relationships of socio-economic status and sex with school achievement and found that, although girls achieved beyond boys, the expected interaction effect of SES and sex was not present. Social class was strongly related to achievement in reading and computation, and differences based on SES levels far outweighed those based on sex differences.

At Bradford University, Toomey (1969) differentiated stable and unstable working class families. He tested the 'embourgeoisement' of

working class families in Kent in relation to education and aspiration. He found that those families classified as home-centred, family centred, socially isolated and relatively affluent held higher aspirations for their children, took greater interest in their education, participated more in their children's education and had children more likely to pass the 11-plus examination. They also found that parental aspiration varied as a function of child's educational attainment. Thus a reciprocal parental attitude--child performance factor underlay the expressed bourgeois values of stable working class families. A Canadian study (Siemens, 1965) of 1844 11th and 12th grade High School youth showed that their educational and occupational aspirations were influenced by a combination of socio-economic status and strength of father's and mother's encouragement for post-high school education. A sex difference arose, with boys only being influenced in aspiration by the mother's educational achievement. A simple social class effect, therefore, is not necessarily to be expected.

Nevertheless, main effects of social class on educational outcomes are certainly a major feature of school learning. In their review of the sociology of learning, Harp and Richer (1969) discuss the socio-economic status of the family:

"An individual's social class position is usually measured by the socio-economic status of his family. The higher the family on this factor (as measured by various combinations of parents' education and occupation) the higher the student's aspiration or achievement."
(p687)

These writers quote Charters summary of the variables predicted by SES:

" . . . grades, achievement and intelligence test scores, retention at grade level, course failures, truancy, suspensions from school, high school dropouts, plans for college attendance. . . total amount of formal schooling, academic honors and awards, elective school offices, extent of participation in extra-curricular activities and in the social affairs of the school . . ." (p687)

Noting that prediction does not constitute explanation, Harp and Richer observe the large number of intervening variables which have been introduced to interpret the results, e.g. Boocock's list of four categories: values, child-rearing practices, family size, and relationship with teachers. (*ibid*, p689) Since Bachman (1970) has reported that among parents of high school students 40% of fathers and 32% of mothers had not completed secondary school, while 30% of fathers and 46% of mothers were graduates of high school and 21% of fathers and 16% of mothers had some tertiary or a degree, it is obvious that a great deal of variability in the educational component underlies the generalizations to which Harp and Richer refer. As in other aspects, little comparable New Zealand information is available.

British generalizations, however, support the mainly American generalizations quoted above. Pidgeon (1969) reporting the national IEA mathematics study in England noted that a regression analysis was used to examine the contribution each independent variable made in accounting for the outcome when its relationship with all other independent variables was duly considered. He concluded that

"results of the regression analysis which was carried out gave added confirmation to the other research findings that stressed the importance of home background factors in determining the motivation which drives pupils to succeed in school. The one variable which stood out in this analysis was that representing the selectiveness of the types of school attended, largely because this variable not only contained the past effort of the pupil himself, but also reflected the attitudes which stem from his home background."

Pidgeon makes it clear also (p151) in other parts of his report that school selectiveness reflects relative income of fathers.

The complexity of interacting social class factors in school outcomes is endless. Rehberg (1967) studied nearly 3,000 Pennsylvania second year High School students and found it was later ordinal position of the mother in addition to greater education of mother, higher SES and less family size which contributed to higher aspiration. Mygard (1969) in a Norwegian study of 255 junior high school boys found that higher social class boys were less motivated by fear of failure than lower social class boys. This result held true even when intelligence was held constant. Goldman (1967) looked for fundamental conflict in the school adjustment of the disadvantaged and concluded that two factors outweigh all others: public schools are designed to meet the needs of the middle class and school activities and attitudes are more suited to girls than boys. Not having suitable male models to the degree the middle class boy does, the disadvantaged boy is at a loss for male behaviour patterns with which to identify. Sistrunk and Brandner (1965) found that educational motivation was affected by community custom and finances, and argued that intervention at an early age was therefore necessary. Mayeske, (1970) et al. in a U.S.O.E. nationwide study concluded similarly to Bachman (op.cit.) on the primacy of SEL and family process but found school attended - as differentiated by community context - to be another major factor. Gilbert (1968) found that if a school was described in terms of community factors (finance and socio-economic data) and school achievement test scores, a high prediction of student achievement could be obtained. A remarkable multiple correlation coefficient of .93 was obtained by the following predictors (listed in order of influence): (a) overcrowded housing; (b) adult educational level; (c) training and experience of teachers; (d) percentage of working married women with children under age 6;

(e) total school tax rate; (f) quality of teacher salary schedule.

Clements (1970) in a Wisconsin State University study found that students most likely to succeed in college are of moderate means, have well-educated mothers, are interested in learning for its own sake, have learned to work and have some idea of what they want to do. Brodie (1968) looked for the factors which differentiated disadvantaged New York City College students from their disadvantaged peers who failed to go to college. It was personal influences, as from parents, guidance counsellors and teachers which helped them. A group of five Ph.D. dissertations supported by the U.S.O.E.

(Suchman, et al., 1968) concluded that:

1. Social class is related positively to educational aspiration;
2. Family size is related negatively to educational aspiration;
3. First-born status is educationally advantageous;
4. Girls are just as likely, in the same family composition, as boys, to have higher educational aspiration.

Wiseman (1968) surveying British research in educational deprivation and disadvantage points out intelligence is developmental, is only partially correlated with parental intelligence and as measured by I.Q. tests is affected by environmental experiences; therefore it is not safe to assume that a low test score is valid. Continuing on the varied effects of educational deprivation, Wiseman notes:

1. Factors in the home environment are overwhelmingly more important than those of the neighbourhood or the school.
2. Of these home influences, factors of maternal care and of parental attitude to education, to school and to books, are of far greater significance than social class and occupational level.
3. Environmental influences on educational attainment are greatest at the youngest ages and get progressively less influential as the children get older. This does not deny the inevitable effect of 'cumulative deficit' if adequate remedial measures are not taken.
4. It seems likely that the greatest damage occurs before the child ever reaches school, and this may well be the major reason why school factors appear so weak in their effects.
5. Adverse conditions of home and neighbourhood have their greatest impact on the more able children.

In view of these startling facts Wiseman advocates measures to improve language development, family attitudes and teacher training.

The other side of the picture in England is given by Pidgeon (1970) who observes that not only is social class - as indirectly expressed in enrolment in better schools - the main predictor of school achievement,

but school success in turn leads to high expectancy of job status. More importantly, however, success is an independent influence upon expectancy of job status, irrespective of school type or of father's occupation. This, it might be suggested, amounts to a functional autonomy of acquired motives, or a cumulative asset.

The next major consideration under the heading of social class influences is that of influences on occupational placement. Harvey and Harvey (1970) studied social class and occupational expectations of 345 Toronto 10th grade students in a socio-economically heterogeneous, multiprogram urban high school. When congruence was defined (1) as congruence between occupational values and occupational choice; (2) as congruence between financial expectations and actual likely earnings; (3) as congruence between own occupational choice and his parents' occupational choice for him, it was found that students from higher socio-economic backgrounds demonstrated greater congruence in all three dimensions than students from lower socio-economic backgrounds. At Leeds University, Marriott (1969) studied the degree to which home and school social levels influenced the aspiration and determination of 438 fourth year boys in five contrasting secondary schools in an industrial city. The results indicated that working class children had not entirely internalized the ethic of success through occupational status and consequently have less psychological and social access to available opportunities. Determination to achieve high status goals seemed less in working class boys and in socially less favoured schools. Bachman (op.cit. p173) found that about 85% of their second year high school sample could provide a tentative answer to the question, "What sort of work do you think you might do for a living?" Using family background and intelligence scores as predictors, a multiple correlation coefficient of .50 with occupational status, as chosen, was obtained. The strongest single predictor of occupational status was intelligence ($\text{Eta} = .37$). Bachman concluded (p179) that fully 50% of their explanation of plans or aspirations was in terms of unique effects of family background, effects that occur quite apart from intelligence. Socio-economic level correlated with occupational aspiration at the same strength as intelligence did. ($\text{Eta} = .37$)

The last consideration to do with social class differences is that of personal well-being or mental health. Little correspondence in conceptualization, variables and methods can be expected in this area. Most studies, however, are concerned with aspects of social adjustment, attitudes and self-perceptions within the normal range.

Hess et al. (1969) reported a cross-national study of child socialization in six countries - Denmark, Greece, India, Italy, Japan, U.S.A. - in terms of authority, rules and aggression. Social class was found to influence positive ratings on relationships to authority and attitude to aggressive confrontation. Sex was the strongest factor in negative ratings (males more negative) while in Western countries those of middle class were the most compliant. Brunner (1970) investigated mental well-being defined as happiness and mood factors in relation to extra-curricula activities and family social class in adolescents. He found that with increasing social class, students tend to be happier and in better spirits, more likely to find much fun in life, less discouraged, less lonely and less anxious. Family size had an adverse effect on happiness in lower class students. Attendance at an upper class school meant more likelihood of being discouraged and lonely for lower class students.

Gezi (1969) found in a study of middle- and lower-class high school students in California that the lower-class group scored higher on all measures of creativity employed. It was hypothesized that the middle class child, living in a more structured environment, might be restricted in the development of playful cognition.

At the University of Aberdeen, Smith (1970) investigated the literature on stereotyping and hypothesized that negative adult stereotyping of adolescents may encourage more general presentation of more derogatory stereotypes through the mass media and have an adverse effect on adolescents. Likewise, though more rarely, a positive stereotype is held, with helpful effects.

Pidgeon (1970) devoted a significant monograph to what is in an important sense a personal well-being factor, that of expectations, as affecting achievement. His argument adduces much research evidence on the single and cumulative effects of selection, streaming, teacher expectations, self-expectations and absence from parents, and concludes that it is the motivational factors of home and school, and not "the more fixed material and economic conditions" (p54) which account for the level of attitude and desire to attain on the part of secondary school pupils.

Rural-urban differences. Little study of educational and related characteristics of rural and urban school populations as such has been carried out in New Zealand. Cora Baldock (nee Vellekoop; 1971), studying the vocational aspirations of 14 year old farm boys and non-farm boys found striking similarities in their aspirations. The lack of difference, in contrast with marked differences found in similar American studies,

is explained by the higher status of farming in New Zealand and the relative equality of peer group contacts of New Zealand farm boys and non-farm boys. Differences in socialization patterns are suggested in a Webster (1972b) report. First-year teacher's college students whose fathers were farmers were found to be somewhat less optimistic, and to rate their parents less warm and less permissive.

A variety of North American studies (Jeffrey, 1966; Seidel, 1968; Merrel, 1968; Summers, 1968; Folkman, 1962; Light, 1970; Wittman, 1970; Roper, 1963; and Force and Siemens, 1965) contribute to a clear picture of general cultural and educational disadvantage in rural high school attendance. Factors contributing are poverty, isolation, cultural deprivation, poorer school facilities and lack of opportunity for relevant experience on the part of American rural youth. Though some aspects of the marked conservatism of rural America may be found in New Zealand, the general socio-cultural deficit would not be true of rural New Zealand.

Culture and race differences. A number of studies have examined the possible association of specific cultural differences with educational variables. In a comparison of the cultural values of 1189 Scottish and 1268 U.S. 10-18 year olds, Cameron and Robertson (1970) administered a 27-item Likert-type values questionnaire and an open-ended question asking the two most important things in life. Similarities appeared much more marked than dissimilarities, with no differences appearing on the structured questionnaire and few on the open-ended part. U.S. subjects tended to value family relationships and self-actualization more than their Scottish peers while Scots valued more a career and happiness, fun and health - and satisfaction of the biological imperatives.

A somewhat similar comparison of American and Iranian adolescents (Bahador and Somerville, 1969) indicated that the most conspicuous differences were due to the more rigid religious traditions in Iran. The Iranian adolescent had learned greater self-discipline and had a firmer relationship with his parents and family members.

In a study of 500 adolescents from each sex from U.S., the two Germanies, Chile, Poland and Turkey the subjects were asked to record their vocational goals. Analysis revealed that the Germans showed the greatest ambition and that boys generally chose higher goals than girls. Results are attributed to the different motivational pressures to which the various groups had been subjected.

Various studies have investigated intracultural racial effects. Hill (1970) studied the attitudes of West Indian and English adolescents.

From 400 randomly selected subjects from six secondary schools in the West Midlands it was found by use of the semantic differential method that West Indians' attitude toward self and education was more favourable and that toward family less favourable than that of the English students. Both groups demonstrated attitudes of racial tolerance. A South African study of white and coloured adolescents (Lazarus, Kessel and Botha, 1969) examined achievement motivation and external-internal reward contingencies in groups of similar social class. Results supported previous findings that certain minority groups who are subject to discrimination have low achievement motivation. Mednick (1968) found negro-white differences on intellectual aptitudes and abilities but "when socio-economic, cultural, and school factors are simultaneously controlled, the observed racial differences in test performance are markedly reduced." (p3-7) Bachman (1968) asking how important are the racial and social differences found in the Youth in Transition study, concluded:

1. The same dimensions of socio-economic status and mental health can be applied to both white and black;
2. Whites and blacks exposed to the same school, region, SES level, etc. do not reveal the marked racial differences in test scores obtained from uncontrolled studies.

"At the risk of oversimplification" Bachman states, "it seems to us that the similarities which have thus far appeared between white and Negro subgroups in our study are more impressive than the differences." (p 7-12)

In contrast to the mainly cross-sectional studies of negro-white differences, a longitudinal study of educational growth was carried out by Rosenfeld and Hilton (1971). Subjects were negro and white students in the same high schools and the same curricula. These students had participated in a nationwide study which called for a battery of tests in grades 5, 7, 9 and 11. At grade 5 the negro students were 1-2 years behind whites and on most tests the gap increased over time. Analysis of co-variance showed, however, that usually the gap was no more than would be predicted on the basis of the initial differences in mean scores between the groups.

Further insight into the nature of intracultural ethnic differences comes from a study of Mexican-Indian and Anglo Junior High School students in the U.S. (Evans, 1969). Depressed achievement of Mexican-Indians was able to be attributed to their lower self-concepts of ability, fatalistic, present-time orientation, non-democratic independence training experiences and high religious social distance. The non-intellective correlates of achievement in culturally deprived families were studied by Dales and Walters (1969) in Florida. The relationship of self-concept, anxiety, family adjust-

ment, parental aspiration and level of aspiration of lower class black and white boys was studied over a three year period among 762 youths with I.Qs ranging from 70 to 142. The major difference was that, while both groups were initially highly anxious, the whites became considerably less so, while the blacks remained highly anxious into high school.

Various non-intellective effects of racially focussed disadvantage have been investigated. A Canadian study (Murray and Wellman, 1971) showed that students of high achievement and equal social class show equal student role identification but that independent of achievement blacks show lower student role identification. A Chicago study (Lassing, 1968) showed that Negro high school students scored significantly lower on the ego-function factors sense of personal control and willingness to delay gratification. Levine (1967) studying High School seniors in Kansas City found that low SES blacks had higher aspiration and determination than low SES whites. In a study of expressed moral beliefs of Negro, Puerto Rican and white 8th grade boys (Boxhill and Kalarickal, 1969), all in lower social classes in Harlem, N.Y., it was found that whites scored higher on the honesty and responsibility scales of the Havighurst and Taba Student Belief Inventory (Isler's revision).

Certain relevant pieces of knowledge have arisen from attempts at social-educational intervention in the social inequality problem. Katz (1967) reports a detailed experimental study of motivational determinants of racial differences in intellectual achievement. Results are best summed up by the author:

"... in order to understand the effect of positive and negative social reinforcement on Negro children it is necessary to take into account the need state of the individual child and the racial identity of the adult dispenser of reinforcement. ... the results may have implications not for biracial teacher pupil pairs per se, but only for situations in which the Negro child perceives the white person as hostile, unfriendly, or disinterested." (p12)

Specific results indicated

1. that teacher attitudes to Negro children will be very important;
2. that Negro children will be highly sensitive to the educational quality of both teacher and classmates, i.e. he will be more highly influenced by these.

Rohwer (1971) in a study of learning, race and school success, observed Negro and white children under controlled conditions and concluded:

1. the development of tests to measure learning proficiency and learning style is crucial for obtaining an understanding of the phenomena encompassed by the topic of 'Race and School Achievement';
2. a major objective for the curriculum in the early years of schooling,

especially for low SES Negro children, should be to help them to master elaborative learning skills, i.e. to actualize children's capacity for imaginative conceptual activity through concrete, explicit and specific instructional programs.

It hardly needs noting that New Zealand studies in the area of the general family environment of education are painfully lacking in the literature. Recent study of the problems associated with Maori education have been undertaken by Bray (1970) and Harker (1971, 1972). Bray drew implications from broader social research among Maoris by Ritchie (1963, 1968) and Metge (1967) and educational research by Lovegrove (1966) to form a theory of extent of future time orientation as a distinction between Maori and non-Maori. In an investigation among young secondary school pupils, using a specially constructed questionnaire, he found strong confirmation among boys of the hypotheses that non-Maoris would have longer future time orientation in respect of major goals and would show greater tendency to delay gratification, than Maoris. Findings for girls were of much lesser strength. Harker (1971) studied socio-economic and cultural factors in Maori academic attainment and concluded that it is erroneous to generalize from Maori-Non-Maori contrasts the notion that poorer academic attainment is an invariant ethnic characteristic, since in fact Maoris are not in this regard a homogeneous group; they display as much variance on academic variables as do Pakehas.* In a study of the association of birth order and family size with university attendance, Harker (1972) found although both first-born status and smaller family size characterize European students (40% first-born; 3.3 children in family), family size did not affect the proportion of Maori students who were first-born (45% first-born; 7.1 children in family).

Little has been done to establish New Zealand tendencies in the education of the social classes. Webster (1971) has developed the theme of inadequacy of New Zealand education in its human environment, provisions, its failure to overcome the disadvantages of those from deprived backgrounds, its use of examinations to screen out those whom the schools have failed to teach, and its preoccupation with the economic functions of schooling. Webster had earlier shown (1970) that a marked improvement in the educability and attainment of relatively maladjusted non-academic girls in high school could be obtained by use of a supportive classroom experiment. A study of senior high school students in the four secondary schools of a small New Zealand city (Webster, 1972b) showed, among other things that:

1. Socio-economic origins were unequally represented in the four schools, to the disadvantage of lower SEL students.

* Pakeha is the Maori term for the white.

2. Internal examination results were more highly correlated with intelligence at the lowest SEL ($r = .600$; $p < .001$) than at the highest SEL ($r = .362$; $p < .05$), thus indicating that greater resources of intelligence are required for attainment among less advantaged students.
3. Similarly, higher ability is associated with greater emotionality and feeling-awareness in the lower SEL group than the higher.
4. Girls who intended university study typically aspired to the bachelor's degree, boys to higher degrees.
5. Education appeared to be a more integrated social-personal-intellectual experience for girls.
6. Although, using multiple regression analysis, intelligence was found the major predictor of academic achievement, especially among males, it appeared that at this educational level, from half to three quarters of attainment is not explainable by measured intelligence. Family relationships and attitudes taken together were more important predictors than simple social status indicators, both of intellectual and non-intellectual outcomes.
7. Canonical correlation confirmed the existence of a relationship between 'strong-positive' socialization (father's occupation, father's education, mother's education, respect from father, respect for father, respect for mother, warmth and permissiveness of family relations) and an 'achievement-responsibility' (liking for study, liking for school, liking for social service, school certificate average, internal examination average, I.Q. and psychological independence). For girls the first canonical correlation was .824, yielding 68% prediction; for boys, the first R_c was .495, yielding 24% prediction. A further analysis of the relationship of family relations variables alone, without social status variables, to a set of ability-attainment-aspiration variables (I.Q., School Certificate and educational goal) yielded a canonical correlation for 178 boys, $R_c = .387$; $p < .01$. The separate contribution of family relations factors is seen to be about 15% of variance on the intellectual matrix. These findings indicate that the home background factors reported in overseas literature as affecting educational outcomes are significant influences even among the relatively successful senior pupils who have already survived the third year screening examination. Having found, in the boys sample, factors of I Positive Family Relations; II Ability-Attainment; III Inner Support; IV Studious-Religious Interest; V Under Achievement; VI Social Class, containing 87% of total common variance, Webster concluded that further investigation of the factors characterizing secondary students was justified.

Parent-Child Relations

In Webster (1971) is given an overview of recent findings on child-rearing practices and parent-child relations. Major sources are shown to agree in general that the major dimensions incorporate two orthogonal factors: love-hostility and restrictiveness-permissiveness (or simply support and power), while an oblique dimension of anxiety affects all resulting combinations of the first two. Effects on child personality and behaviour are, generally, that if parental behaviour is Warm-Permissive the child is outgoing, sociable, adventurous; Warm-Restrictive parents tend to have conforming, compliant, conscientious children; Cold-Permissive parents have socially aggressive children; Cold-Restrictive parents have withdrawn, timid children. The existence of cultural differences is noted also.

A later chapter will take up the problem of the absence of definitive studies of New Zealand child-rearing practices. A recent doctoral study (Loberg, 1970) took up the neglected theme of the effects of parents' manner of exercising authority on adolescent attitudes toward authority. Loberg found that children of authoritarian, self-concerned parents are the most resistive to authority. Child-concerned parents, regardless of their manner of exercising authority, tended to have adolescent children rated as submissive to authority. This result is similar to the general support-power theory above, but suggests a prepotency of the support factor as the condition of social learning.

This section will concentrate on empirical studies of effects of parent-child relations on intellectual and non-intellectual outcomes in children.

Watts (1970) has reviewed the effects of the home context on cognitive and affective characteristics which influence progress in school and has concluded that these influences justify the development of programmes in schools to foster educational development and healthy personality development in children from all backgrounds. Not only so, but she advocates that parents should be enabled to share the growing knowledge of the impact of home environment on development.

Many variants of the theme of effective parent practices are to be found in the research literature. Gordon (1967) argues that honesty and the ability to effect working compromises in conflict are the basis of effective parent-child relations. Kratochvil (1968) tested the effect of parent and teacher offered levels of facilitative conditions upon indices of student physical, intellectual and emotional functioning, but found none. He attributed this astutely to the fact that neither parents nor teachers were functioning at a high enough level to have an effect. Smith (1970) found certain power variables related to the influence of parents on adolescents in high_{school} and first year of university. These variables were the

adolescent's tendency to turn to the parent for direction, to believe in the parent's possession of useful knowledge, to accept the parent's legitimate right to exert influence and to perceive decisions as difficult. Heilbrun (1970) found that in the function of parental practices as either direct reinforcement or as vicarious, males responded more to direct reinforcement under conditions of high nurturance and high control.

A nation-wide American survey of adolescents (Peterson, 1968) established a normative tendency for adolescents to perceive that their parents exercised high control and high interest in them, females rating parents much higher on both variables, and adolescents in general perceiving the mother as having greater control and interest than the father.

Cross-cultural differences in reference to adolescent-parent conflict were investigated by Schiamberg (1969) who concluded:

"Non-technological societies which have relatively clearcut and broadly accepted societal goals and values have less adolescent-parent conflict than societies in which individuals are confronted with the choice of many different occupations and life-styles."

The hypothesis that the adolescent will have greater affection toward the parent who understands him most was tested by Wakefield (1970) with the negative conclusion that although parents are able to predict their adolescents' responses to problems with greater than chance accuracy, this form of parental awareness appears unrelated to the degree to which the adolescent likes that parent, or sees himself as similar to that parent.

An attempt to obtain the profile of good parents and teachers was carried out by Yamamura (1970) among 309 Hawaiian high school students, both white-collar and blue-collar. Their main source of advice were parents, peers, siblings, school counsellors and ministers, in that order. Their view of what parents ought to provide was: a happy home life, understanding, trust, help with homework and not over-strictness, scolding or indifference. Bienvenu (1969) found that four intuitively helpful parent-adolescent communication practices - good listening habits, freedom of expression, understanding, and acceptance-were associated with a higher degree of communication, while criticism, sarcasm, lack of trust, and lack of acceptance of the adolescent are associated with a significantly lower level of communication.

A cross-national study conducted by the Harvard University Laboratory of Human Development (Kandel and Lesser, 1969) examined the association between family patterns of relationships and adolescents' feelings of independence. The authoritarian pattern of decision-making is most frequently observed in the U.S. while the democratic is the modal pattern in Denmark.

Parent differences in instrumentality-expressivity of function in child-rearing were investigated by Dahlem (1970). American adolescents'

perceptions of their parents showed that where clear differentiations were reported, mother was more often termed expressive, father instrumental.

The question as to the relative usefulness of ratings of parental practices as reported by the parents themselves or as perceived by the children was investigated by Cox (1970). Results, using the Roe-Siegelman PRC questionnaire showed that when relationship to extra-familial measures of the child's behaviour is the criterion, the child's perception of each parent is superior to the parent's own report; the mother's own report is better than the father's own report; and the child's perception of the father is better than the child's perception of mother.

Effects of family relations on school-related variables have occupied the attention of many researchers. Mayeske et al. (1970) found that family background, including both social status and family relations "plays a more significant role in the development of achievement and motivation than do school factors." Pidgeon (1970) has been cited above as concluding the same for British secondary schools, though not measuring family relation variables. Bachman (1970) measured parent-child relations as closeness to parents, parental consultation with son, and parental punitiveness, to obtain an index of interpersonal relations with parents. This index was found

to be the strongest background predictor of positive and negative school attitudes ($r = .35$ with each). All background factors predicted 16% of each attitude variable. Wallin et al. (1970) studied the effects of family and school influences on the educational goals of working class and middle class tenth grade boys, in a Stanford University project for U.S.O.E. They found no support for claims that the social class composition of a school can change the educational goals of students. But they were clear on "the power of the family in the shaping of young people's educational goals". (p283) Specifically, they found that the more positive the parent-child relationships, the greater was the likelihood of concordance between parents' goals and son's aspirations.

Family interaction, motivation and aspiration values in high school dropouts and graduates was studied in Ontario, Canada by Crawford (1970) for the Ontario Institute for Studies in Education. Results showed that graduates and their mothers more likely subscribed to achievement values; that graduates had more egalitarian relationships in discussion with their parents; that graduates' mothers were better educated, subscribed to more democratic attitudes toward child-rearing and were less demanding, and that there was no difference between graduates and dropouts on their father's educational or occupational levels.

Coleman (1969) successively demonstrated the hypothesis that school

related attitudes and behaviours of parents in lower working class are similar to those of parents in upper middle class when both sets of parents have sons who are successful in school. Similarities between the two sets of sons are consistent with this finding.

Heilbrun (1968) studied under-achievement as related to perceived maternal child-rearing and academic conditions of reinforcement. Results suggest : High control and low nurturance characterized Ss rated under-achievers, whereas high control and high nurturance marked achievers. Heilbrun appears to see the nurturance condition as decisive, with low nurturance producing "reinforcement sensitivity" and high nurturance "anticipated positive reinforcement".

Elizabeth Chance, however, found in a cross-sectional analysis among high school boys and girls (1968) that "Effective achievement performance as measured by academic tests and intelligence tests was associated with permissiveness toward controlling child behavior . . . Greater maternal concern with control is associated with less effective school performance in both sexes."

A range of additional studies (Choe, 1971; Nelson, 1968; Sandis, 1968; Reimanis, 1970; Kandel and Lesser, 1969; Blocker, 1968; Ringness, 1970; Froiland, 1970; Kimball, 1968; Sattabanasuk, 1968; Wiggins, 1971; Hess, et al. 1969) demonstrate respectively: that family relationships affect Korean secondary students' achievement; that mother employment as such is not a consistent factor in adolescent girls' adjustment; that children with a clear awareness of their parents' plans for them usually share those plans; that for males a supportive, consistent home environment relates positively to internal reinforcement control (defined as belief that rewards and punishments are contingent upon one's own behaviour) while for females, a somewhat rejectant home seemed to force independence and development of internal reinforcement control; that concordance on educational goals is higher with mothers than with best school-friend; that students' family influences are poorly accounted for in administrative records and thus there is little likelihood of a real service to students; that identification with peers, parents and teachers relates to pupils' own achievement values, to their average attainment and to their aptitude test scores; that parental 'value of education' predicted academic achievement for high ability High School students; that urban Mexican-Indian High School students' academic achievement is related to parental educational aspirations in a context of higher family stability and higher Anglo representation in the school; that little effect of parent characteristics on academic attainment is to be found in a middle to upper class junior high school sample (presumably for lack of

variability of those characteristics); that in ratings of teenagers' academic aspirations, mothers and fathers tend to agree with one another, parents rate teenagers higher than they rate themselves, boys and girls see themselves similarly to each other, misunderstood teenagers do not seem to differ in most of their ratings from understood teenagers but are higher on ratings of academic adequacy, parent-teenager relations and perception of parents as 'patient with me' and academic aspiration. The final item listed incorporates a summary by Hess of the studies of parental influence on academic achievement, with a classification of these factors by Gordon of parental influence as either demographic, parental-cognitive, or parental-emotional. Gordon enunciates the idea of parent power in programmes of education, and Scheinfeld in the same report concludes that in order for basic structural change to take place in the lives of disadvantaged families the parents must become actively and effectively involved in the educational environment.

A further area of marked effects of the home is that of vocational orientation. Bachman (1970) constructed a measure of mean ambitious job attitude and obtained the level for each of eight categories of family relations, from poor to good. There was a steady increase in mean ambitious job attitude from 4.89 for poor family relations to 5.39 for good, with a mean of 5.06. The eta coefficient for the two variables was .33. An attempt to classify vocational choice as either persons or non-persons oriented (Appleton and Hansen, 1969) as a function of parent-child relations revealed no significant relationship, although need-nurturance was related. Orleans (1970) found that although, in general, vocational preference reflected the individual's social milieu, there was an increased need for structured or security-providing work environments among adolescent males who experienced more authoritarian home discipline.

It is widely assumed that parental practices have their greatest impact on children's mental health. Few studies systematically controlling for operationally defined indexes of parental behaviour are to be found, and the mental health variables studied are often isolated and lacking in general personality theory context. Mueller (1968) reported strong confirmation of the central hypothesis that over time and under stress, behaviours outside of the family converge on styles of interfamilial behaviour with the parents.

A study by Hilliard and Roth (1969), although focussed on the relationship between mother-child relations and academic achievement, yielded results which suggested that the underachiever typically suffers maternal rejection and adopts under-achievement in order to maintain a dependent relationship with the parents and to avoid adolescent independence.

Bachman (1970) found that boys with better family relations had better social values, more sense of control over their fate and greater trust in people and government. Bachman further found that while Self Esteem, defined along Coopersmith (1967) lines, yielded the expected construct criterion validity relations with such other personality states as Negative Affective States ($r = -.52$), Happiness ($r = .54$), Somatic Symptoms ($r = -.34$) and Impulse to Aggression ($r = -.34$), it was the independent variables which yielded most significant information. The eta prediction coefficient for Self Esteem with Intelligence was .14, with SEL .15, but with Family Relations .36. Young blacks did not seem to suffer by contrast.

Several studies highlight the factors associated with parental absence. The specialized studies as reported in Hoffman and Hoffman (1964) tend to be concerned with special problems. For purposes of this study, normal and comparative population trends rather than studies of deliberative samples seem to be more appropriate. For comparative purposes the American figures for father separation, as reported by Bachman (1970) are worth noting. 8% reported one or both parents not living, 5% father not living, 2% mother not living, 1% neither parent living, 79% living with both parents, 13% separation or divorce the reason for not living with a living parent. No other educational studies of parental separation appeared in the sources studied.

Family size is highly loaded with socio-economic influences and few studies have separated its influence from that of SES. Bachman related family size to I.Q. scores and found an unvarying monotonic relationship, with mean I.Q. for boys with no siblings 111.7, and for those with 7+, 97.8. McCall (1969), however, using Project Talent data found that intelligence was independent of family size when socio-economic differences in intelligence were removed. Poppleton (1968) compared the influence of rate of physical maturation and family size on the intelligence of Yorkshire girls aged $11\frac{1}{2}$ to $15\frac{1}{2}$, finding that family size is a more important variable than age at puberty in producing significant differences in girls' ability and attainment. Oberlander et al. (1970) found a significant interaction effect of family size and birth order on scholastic aptitude and achievement, in 8th graders, with the main effect arising from differentiation between first-born and later-born with increasing family size. A major survey of birth order and intelligence in 88,000 high school seniors (Burton, 1968) showed a slight superiority of first-born over last-born. Adams and Meidam (1968) found that family size, sex ratio and child space were related to attainment, favouring those from smaller families, with several years separating them from their nearest siblings, and in the case of blue-collar females, those with few male siblings.

School Environment Influences

Harp and Richer (1969) note that there are two major problems in the tendency of sociologists to use aggregated measures or analytic properties to type schools: the self-selection problem and the problem of statistical control. They conclude from the existence of two main structural features - socio-economic level of the school and school level - that the interaction of these two is the salient feature of recent research on school effects. As will be mentioned later in this study, I have controlled for these factors by sub-group analyses of SES levels incorporating the school type as a variable.

Sprinthall and Mosher (1969) found that school type was the most important influence on perceptions, attitudes and motives toward school, with the small, private school manifesting intrinsic interest in learning, substantial self-direction and a strong sense of personal independence.

Lennard (1969) found that the streaming system created a special school effect in the Netherlands. He concluded that streaming maintains the present system of social stratification by bringing aspirations into line with expectations and by reducing objective distribution of talent by creating a social distance between certain classes and certain types of school. In addition to higher occupational expectations, the upper stream expressed greater dissatisfaction with the school, a consequence, the author claims, of the greater academic pressure to which they are exposed in a streamed system.

Vogel and Bowers (1968) found that while graded Mid-Western U.S. schools promoted greater achievement attitudes, non-graded school aided conceptual maturity and social activity. Patton (1968) in a three-year study found that non-academic streams in U.S. high schools gained far less on SCAT and STEP tests than did academic streams. Tapper (1969) found that top streams in British comprehensive schools had a mitigating effect on social class impact and raised aspirations for many. Steere (1968) found that graded students in Utah gained more than non-graded in CAT mathematical reasoning.

Baird (1969) studying the big school-small school issue found in two large samples that Ss from small schools participated to a greater extent in a variety of areas of extra-curricular activity. No differences in tertiary achievement of students from big and small high schools were observed. Wicker (1968) found greater social satisfaction through activities roles in smaller high schools. Heath (1971) found no relationship between school size and personal and social adjustment.

School climate as a complex system effect has been intensively studied by McDill et al. (1969), in a study of 20,345 students, 1029 teachers and

20 principals in 20 public co-ed high schools in 8 states in 7 different geographic areas of the U.S.A. These workers found major school climate factors but only a moderate effect of climate on academic behaviour. Hay (1971) studying 45 New Jersey High Schools developed a prototype of an alienating school as more custodial, with greater pupil control orientation, a more 'closed' organizational climate, a lower percentage of minority students, larger and non-urban. Allen (1971) found in a study of system openness and communication integration in high schools that innovative schools were characterized by greater attendance of teachers at extra-system meetings and greater participation in decision-making by members of the system.

A particularly obvious school type difference is that of single-sex and co-educational schools. British research carried out by Dale (1969) concentrates on attitudes of pupils and teachers in these school types. Most definitive findings reported by Dale may be enumerated:

1. Teachers currently working in co-ed schools almost unanimously prefer them. (92% in favour)
2. Teachers who have taught in both types of schools also prefer co-ed. (92%)
3. Ex-pupils produce the same pattern of preference.
4. Girls in single-sex schools did not rate their teachers as helpful as others.

Dale discusses his impression that, because of greater social satisfactions and a desire to please the opposite sex, girls behave better, and are less catty and boys less boisterous in co-ed schools. In a second volume (1971) Dale reports on pupil happiness, school atmosphere, out-of-school conduct, attitude to the opposite sex, social relationships between boys and girls, and anxiety about school. Findings are more briefly reported in Butcher (Ed., 1968). On attainment: "With boys there is a consistent trend of superiority in co-ed schools, in spite of their lower social class intake, less restricted entry, and probably rather less well-qualified staff. . . . There is no evidence whatsoever for the hoary argument that a mixed school is bad for boys because the presence of girls distracts them from their work. . . . For girls the trend is not so clear. In raw-scores, the co-educational girls are slightly inferior in a majority of subjects." (p250) On pupils' attitudes and emotions: In ex-pupils of co-ed schools, males were slightly happier, females much happier; males were equivocal about teacher-pupil relations, females quite positive; 60% of men preferred the mixed school, as did 62% of the women. In attitude to the opposite sex: 40% of men ex-pupils of single sex schools and 39% of women felt their schooling had been a hindrance to their relationship with the opposite sex.

In general the great weight of opinion of those who had attended or taught at both types of school was heavily weighted in favour of co-ed schools. (It will later appear in this study that the variable Non-State School Attendance is in fact the equivalent of single-sex private vs co-ed state school.)

A Finnish study (Kyostio, 1970) inquiring into the prediction of final success in co-ed and segregated schools concluded, not inconsistently with Dale, that single-sex was better for girls, mixed better for boys, the criterion being total academic point value.

In an American study comparing adjustment to same-sex and opposite sex in Catholic co-ed and single sex high schools (Tamayo, et al., 1971) freshmen students in the co-ed school were better adjusted than those in single-sex schools; seniors in single-sex schools were better adjusted than freshmen, but this was not true for seniors in the co-ed school. Males in the single-sex school were better adjusted to their own sex than were males in co-ed schools. Females seemed little affected by school type.

Another British study (Kniveton, 1969), examining attitudes to school found single-sex grammar school boys more favourably disposed to school.

Webster's (1972b) New Zealand study found a significant difference in favour of the girls single-sex school in comparing the expressed liking for school in 5th year single-sex boys and girls school forms.

Keys and Maddox (1969) in a Welsh study found that in a single-sex girls grammar school, family size did not affect performance until the family was seven or more, church attendance related to better performance and in general daughters of professional parents were the only ones to do well.

Little study has been carried out on sex-segregation within schools. Ellis (1968) studied effects of same-sex class organization on Junior High School students academic achievement, self-discipline, self-concept, sex-role identification and attitudes toward school. There was no effect. Girls were superior, independent of the segregation factor, on all variables observed.

Private schools overlap as an entity with the sex-segregation issue in school types but 'privateness' is itself an independent category. A Virginia State Department of Education study, 1966-67 found that private school boys were distinguished by higher occupational aspiration, higher father's education and occupation and higher performance in standardized tests. Griffin (1969) in a Staffordshire, England study of 3 comprehensive, 3 grammar and 3 secondary modern schools (the first two being classified selective) concluded that (a) comprehensive schools provided a stimulating environment for children of all abilities; (b) there was little difference between the three types in English attainment; (c) brighter children expressed better attitudes toward school in comprehensive than in grammar schools, particularly for girls; (d) girls of average and below average abilities in secondary

modern schools also had positive school attitudes; (e) comprehensive school organization had a unifying effect on morale and appeared to strengthen the holding power of the school. Pidgeon (1969) has shown that it is the grammar schools rather than the independent schools which are superior in mathematics since they select on ability, not on father's income.

Studying Catholic and Protestant high schools in Canada, Najami (1969) found that Catholic high school students tended to have higher occupational and educational aspirations than Protestant. Hartnett (1969) studying attitudes and high school background of Catholics entering university found that the current view that cumulative formal Catholic education produced adults who were not only more religious but whose attitudes reflected more social concern should read that students who choose a Catholic college already reflect more social concern. However, Propper et al. (1970) comparing 40 Catholic parochial high schools and 80 predominantly Jewish public high schools in the U.S. found that the same dimensions of the alienation syndrome (egocentricity, distrust, pessimism, anxiety and resentment) as affected public institutions were equally present in Catholic schools. Ommen (1969) studying attitudes and high school background of college freshmen found no differences in attitudes of students from public and private male boarding schools. Brett (1968) examined the view that there would be greater deference toward authority in Catholic than non-Catholic high school seniors. No difference in Catholics was found, but there was greater deference in middle class than lower, among Negroes than whites and among girls than boys. Jerdonek (1969) found that in 5,705 Catholic high school seniors and 7,105 public high school seniors, Catholic students were superior in understanding scientific processes and on inference; public high school students were higher on recall of science concepts. Kennedy (1971) found that the black student performs better in a private school. An experiment on rooming (Biai, 1971) involving junior college students showed that average and below-average students were helped by rooming with above-average students.

A major contribution to the understanding of school environment effects was made by the well-known Hargreaves (1967) study of Lumley secondary modern school. The process of progressive failure and alienation of the 'delinquent' stream is fundamental to the present study. A factor seldom recognized is forceably demonstrated by Ponzo (1967) in a study of first year and senior students in nine rural Wisconsin high schools. Observing that these students still viewed appropriate sex-role behaviours along traditional lines and that the more traditional the sex-role identity the less the academic success for boys, while the opposite was true for girls, Ponzo argued that schools are feminine institutions, supporting and rewarding traditional

feminine roles. Girls succeed, he argued, because they conform to these roles; boys run into conflict with sex role identity in facing school demands. He argued for a more emergent sex role emphasis in the schools, to release boys from this conflict.

A number of recent reports have strongly stressed the need for more effective vocational education curricula. Maizels (1970) in a major English survey of 15-18 year olds concluded that the schools produce learners and labourers and concludes that this requirement of cheap labour in the economic and social structure conflicts with the needs of large numbers of young adolescents. The Massachusetts State Board of Education (1969) has deplored the poor design and ineffective evaluation of vocational and technical programmes for the disadvantaged. Christensen (1969) in Western U.S. study concluded that there is a need for better vocational programmes and the redirection of almost half to vocational education from plans for professional education, and the development of better in-depth vocational programmes at the local level. Mondart (1970) in a Louisiana Department of Vocational and Agricultural Education concluded that high school students make strong occupational choices early but that information given in schools has little to do with these choices; therefore schools should give better teaching and training options. Petrov (1969) in a Soviet study of the formation of career plans in school found a strong influence of social-intellectual advantage in successful career choices. Toomey (1968) found that in Australia parents of skilled and supervisory occupations preferred practical education for their children. Eggeman et al. (1969) surveyed 167 Youth Opportunity Centers of the U.S. Employment Service and obtained data on 9 categories (job preparation, personality variable, vocational behaviours, school programs, discriminatory factors, family background, community factors, factors inherent in jobs and military obligation) and 5 sub-categories. Problems enumerated by YOC counsellors and by a purposive sample of vocational educators were correlated (Spearman $r = .61$), indicating that these are the real problems facing youth. The counsellors recommended that schools provide better occupational information, more vocational guidance and additional courses teaching pre-vocational skills. Similarly Petry (1969), surveying students of vocational technical schools for the Minnesota State Department of Education, found that there were five areas of concern in which students wanted guidance: housing, financial needs, information relating to school, social and recreational activities and career plans. Above all, the students wanted the school to help them in finding a job.

Aspects of adjustment, motivation and morale as school effects have received regular attention, though like most such information, the know-

ledge leads to little action. The focus tends to be on the systematic effects of school practices. Webster (1971) has reviewed research on undesirable educational, social and personality effects of traditional competitive examinations. Kiefer (1970) has described as a series of 'crisis rites' the Japanese examination system which, he argues, though intended to remove the strain of competition from the classroom actually merely displaces it from the classroom to the community, with resultant interdependence of related psychological effects through family school and bureaucracy.

A more general investigation of factors related to morale in secondary schools was carried out by Coster (1968). Results were mainly in the refinement of the content of morale as interpersonal relationships in the school, appropriateness and suitability of school work, feelings of usefulness of school work, and the value of going to high school.

The non-verbal sector of the school population was studied by Silberberg and Silberberg (1971) who proposed that a bookless curriculum could help make reading an isolated skill rather than a potential frustration in that it is the medium for all other learning.

- Pidgeon (1970) concluded from a number of empirical studies in England:
- (1.) that both in the home and in the school it is not the material circumstances but rather the motivational aspects that are of major importance ;
 - (2.) of special significance is the need for research into the general atmosphere of schools, to ascertain what specific factors have an influence on pupil motivation ; and
 - (3.) one of the main motivating forces is "the expectations teachers have of the level of performance their pupils are capable of achieving". (p122)

A study of self perceptions by Soares and Soares (1970) complicates Pidgeon's picture in showing that disadvantaged secondary students had higher self-concepts than advantaged, but significant lowering of self-image occurred for both advantaged and disadvantaged in the change from the neighbourhood primary school to the integrated, competitive high school.

The personality impact of the high school was highlighted further by Schonell (1963) who observed that students from didactic-directive high schools did better (at .01 level) than those from permissive schools in the pre-university examinations, but the permissive school graduates did better in the first year of university.

A further indication of the school conditions affecting adjustment and motivation is in the conclusion from a representative American study of 501 public schools in 41 cities of 50,000 or more population, (Herriott and St. John, 1966). Part of a National Principalship Study directed by

Neal Gross, this report says that effective elements of administrative leadership were "significantly related to teacher performance" in low SES schools but not in high SES, with the implication that it is in the low SES situation that improvement of administrative leadership would be most influential.

The Classroom Climate

Major effects of the classroom climate may be considered under two headings: structural-organizational and interpersonal-effective.

Structural-organizational factors relevant to this study may be quickly reviewed. Vincent (1969) reviewing class size effects for the Encyclopaedia of Educational Research concluded that the literature gives no reason to use this as a major variable. Woodson (1968) exemplifies the large study in which almost negligible effects of class size on achievement were found.

Class composition, with affective consequences, is involved in the Datta et al. (1966) study showing that teachers are more critical of Negroes and males when they are low achievers than of whites and females. Krantz et al. (1970) found similarly that teachers give more positive appraisal and more total substantive teacher behaviour to pupils perceived as high in academic potential. Those pupils perceived as low in academic potential received more managerial teacher behaviour.

Christie (1968) found evidence that the British sixth form class incorporates two cultures - the Arts and the Sciences, breaking down further into Arts, Natural Sciences and Social Sciences.

Pidgeon (1970) noted the complex effects of ability streaming. First there is the effect of the strong British teacher belief that innate ability played a major role in achievement. Then the associated selection system of education with its practice of streaming pupils into homogeneous ability classes produces the situation in which teacher expectations will lead to a widening of the performance gap between the most able and least able students. Pidgeon maintains that the performance gap between high and low achievers will be greatest in England as a result of the streaming and prevalent teacher beliefs. In support of this statement Pidgeon cites the IEA pilot and mathematics studies involving non-verbal, mathematics, reading, geography and science, showing that the standard deviation on all test scores was greater in England than in any of the other countries participating. This result, he holds, is to a large extent due to the operation of the self-fulfilling prophecy based on teacher expectations. Pidgeon warns:

"Children are often grouped into homogeneous ability classes on the assumption that their innate ability has been correctly inferred from their performance on intelligence tests although for many children from depressed backgrounds the measure obtained will be an underestimate." (p126)

Estimation of the importance of the interpersonal and affective characteristics of the classroom vary widely. Coats (1966), discussing the additional prediction obtained from non-intellective predictors summarized a review of the research saying that in multiple linear regressions non-intellective predictors of achievement added only .04 to .09 to the multiple correlation coefficient. His results were, however, confined to 30 Interaction Type classroom variables. He rightly says, however, and Gamage (1971) in a Bristol study supports this, that the affective climate variables have much more to do with pupil attitudes, an area in which intellective predictors make scarcely any contribution.

But more recent workers (Walberg and Anderson, 1968; Cormier, 1970; Wightman, 1971; Bigelow, 1969; Alschuler, 1969; Hansen and Warner, 1970; Webster, 1970; Evans and Rosenthal, 1969) have shown that variation in the affective qualities of the classroom can have marked effects not only on pupil attitudes but also performance, particularly non-verbal I.Q.

Warning notes come from various reports, however. Good (1969) found that teachers are not good judges of pupil potential. Fleming and Antonnen (1970) found that the self-fulfilling prophecy, if defined as teacher knowledge of I.Q. of pupils, does not affect pupil learning. Jacobs (1970) found that induced teacher expectancies of leadership potential of pupils had no effect on social position of pupils on a sociograph. Davidoff (1970) found no correlation between student evaluation of teaching behaviour and student gain. Murdock (1969) found that teacher knowledge that he is being evaluated improves student evaluation of the teacher, but not student performance.

These findings give limited reason to believe that classroom variables in the interpersonal and affective area might be important, though much more so in relation to pupil affect and attitude than performance.

Teacher Characteristics

Shulman (1970) states: "When conducting (multivariate) studies, researchers must not ignore the teacher as an independent variable . . . researchers must use multivariate experimental designs which include teachers' educationally significant characteristics as factors."

Attempts to do justice to this general demand have usually not been experimental. Mayeske (1970) in a report from "A Study of Our Nation's Schools", used stepwise regressions to show that while little of the influence of the schools could be separated from the social background of their students, those aspects of the schools most involved in student achievement pertained to teachers' verbal skills, racial-ethnic composition, salary level, special staff and services and their view of their teaching conditions.

In an apparently more definitive study, Hanushek (1970) in the Rand Corporation Study "The Value of Teachers in Teaching" found that the characteristic of the teacher most related to pupil gains was the teacher's current involvement in further study for himself. Coats (1970), in a factor analysis of questionnaires from 1427 classes, 837 male teachers and 590 female teachers in Mid-West secondary schools found a single factor - Knowledge of Subject - accounted for 61% of total variance. A competency component seems clear in these findings.

Anderson (1970) found that students' perception of classroom differed by the nature of the subject but that the sex of the teacher was unrelated to these perceptions.

Personal and interpersonal factors in teacher effect have received considerable attention. Gansneder (1970) found that the main effect of teacher attitude toward pupils on student attitude to achievement was non-significant and that teacher attitude related only to student attitude to community and to parental involvement. Interaction effects were not due to teacher attitudes but to SES differences between schools. Faunce, however, found marked discrepancies between attitudes of successful and non-successful teachers of lower-class black children (Faunce, 1969). Effective teachers, identified on peer assessments, principal's records, own stated desire to teach in low-income areas and number of years teaching disadvantaged children, were more empathic to disadvantaged children, more committed to education of the disadvantaged, and felt their students had been wronged by society. McElhinney et al. (1969) confirmed from opinions of 12,655 high school pupils and 628 teachers, that teacher personality and the interaction between pupil and teacher are perceived by pupils and staff to be of major significance, in school functioning. Aspy (1969) confirmed that teacher's positive self-concept mediates student verbal abilities. Tuckman (1969) found that vocational students were more satisfied with courses taught by non-directive teachers, preferred these courses and gained higher grades in them. Webster (1972c) surveyed the literature on teacher style and found that major dimensions suggested were socially inclusive-exclusive and institutionally custodial-democratic. Coates (1970) found that teacher abstractness-concreteness relates to teacher behaviour which affects student performances. Weiss et al. (1970) found that high F-scale students exposed to low F-scale teachers showed particularly low attitudes toward their teachers and gained low grades. Keeves (1972) points out that there has been a shift from the study of status and personality characteristics of teachers to that of more specific behaviours. Keeves summarizes an IEA study carried out by Rosenshine showing that those process measures involving teachers which have yielded inconsistent or

little or no useful relationship with pupil outcomes are: measures of praise, supportiveness, teacher competence, pupil absence, and measures of time spent in various class activities, homework or teacher preparation. Although Keeves rightly points out that a major error in most studies has been the assumption that the teacher is the sole causal factor of pupil achievement, it must also be recognized that the data on those interpersonal process variables may, as Kratochvil (1968) and Carkhuff and Berenson (1968) have shown, suffer from sheer lack of range at the effective end of the scale. Nevertheless Keeves does list those kinds of teacher-enacted processes which do make a difference in pupil performance: measures of criticism by teacher; ratings of teacher warmth, teacher flexibility; organized, achievement-oriented and business-like teacher behaviour; clarity and good organization of presentation; teacher enthusiasm. Consistent with the Carkhuff and Kratochvil argument, it is found that in most of these studies it has been the high level of the teacher-offered conditions which has made the difference to pupil achievement. Wall (1968) has stated, apropos the advisability of a further year of compulsory education,

"Perhaps . . . the critical research problems concerning cultural deprivation, waste of talent and the use to be made of an extra year turn . . . upon the interrelation of the personality and training of the teachers, the meaning, manifest and latent of the school's organization and climate and the cultural and personal motivations of the teacher." (p42)

Keeves (1972) specified as the more useful measures for his study of gain in mathematics achievement: achievement press; provision for independent study; emphasis on work habits and order; affiliation and warmth; stimulation for learning; emphasis on oral work and correct use of language; academic guidance and instruction. These findings support the use of interpersonal process measures of both facilitative and action-oriented kinds as predictors of pupil performance, while playing down abstract personality attributes of teachers except insofar as it can be shown that these are expressed through interpersonal learning processes.

Pupil Characteristics

A very large amount of material is relevant to the topic and some criterion is necessary to avoid the obligation to refer to the totality of child and adolescent development. As in the other sections of this review, the materials selected as relevant are almost entirely those from recent empirical studies of relationships between measured variables. Exceptions are references to global theory and general social analyses of modern youth.

Representative global theories on adolescence and current educational problems affecting adolescents are discussed in Webster (1971). The basic needs and organismic theory with a strong phenomenological component

to account for expectancies, attitudes and learning limitations is assumed by the writer for the present study. Recognizing that specific factors do vary somewhat independently in the personality, a trait and factor approach is adopted, not as an overall account of personality organization but as a methodological necessity. Consistent with trait theory and organismic theory it is assumed that various types of personality will be observable, representing those strategic organizations of abilities, perceptions and behaviours which result from the interaction of the individual with social demands. Thus a phenomenological needs-press theory (Murray, 1938) expressed in personality types which are observable in terms of organizations of traits and abilities is the general theoretical approach to pupil characteristics.

Social analyses of modern youth are regularly produced by social scientists. Garai (1970) quotes with approval Keniston's concept of some years ago that the goals of youth include a new orientation to the future, new pathways of personal development, new values for living, new styles of human interaction, new ways of learning, new concepts of man in society, new types of social organization, new patterns of international relationships and new controls on violence. Greenfield and Finkelstein (1971) taking two sets of data on junior high school students 30 years apart found differences which reflected technical-cultural changes in the structure of the immediate societal environment. Webster (1971) has proposed the existence of a paraculture of youth which serves as an available psychological 'drop-in' for youth while they simultaneously conform as necessary with the mainstream culture. Gaylin (1969) has explained the typical adult put-down of youth in terms of the paradox of extension of adolescence with a simultaneous demand for responsibility; the demand for credentials with little respect for basic qualities; the disenfranchising of the family unit from its training responsibilities; the changing roles of fathers and mothers; the presence of 'the Bomb'; the encouragement to think for oneself; hypocrisy; the ridiculous rites of passage; a lack of community spirit. Gaylin optimistically suggests that the youth behaviours that adults become so indignant about are an attempt by youth to find some standard, some value and some communication with others. Similarly Unwin (1969) has examined the problem of a generation "biologically more mature, intellectually superior, and socially and politically more informed" who are frustrated by an extension of the adolescent period. The complexity of youth problems is suggested by the recent White House Conference on Youth (DHEW, 1971) which set representative adolescents to work on 10 issue areas: (1) draft and national service; (2) drugs; (3) economy and employment; (4) education; (5) environment; (6) foreign relations; (7) legal rights and justice; (8) poverty; (9) race and minority group relations; (10) values, ethics and

culture. They challenged the U.S. government and power structures to respond to resulting proposals. Douglass (1969) has argued that "Today's youth doubtless are performing a great service . . . in forcing us to examine the adequacy of our morality." (p297)

Against the sometimes idealistic versions of the meaning of the modern radicalism of youth, it is salutary to look at youth as educational products. Fantini and Weinstein (1968) have argued for America that if disadvantage is defined not in terms of economics only but to include all those who are blocked in any way from fulfilling their human potential, then "virtually the bulk of our population is made up of faulty (i.e. disadvantaged) educational products." (p166) It has been argued by Webster (1971) that similar problems of both the economically disadvantaged and the materially comfortable are to be found in New Zealand, and that the elite of our youth are disaffected with the values and beliefs of the establishment. The picture is well described in virtual interview transcripts by Joseph (1969). From Finland, Sandven (1968) has reported that over 50% of pupils say they would leave high school immediately if permitted; correlates of the desire to leave include low level courses, low motivation, lower security feelings, lower problem-solving ability, low homework effort, poor conduct, greater absence. The size of the problem, more than its correlates, is what is surprising. The general problem of the failure of schools in terms of whole human growth is well captured by Dreeben (1967), contending that the traditional conception of schooling as an instructional process, primarily cognitive in nature, is at best only partly tenable.

Few answers have arisen for the youth crisis. Jacob Christ (1969) pointed out that there is an increase in adolescents in crisis and that families are the major factor. Boys' problems in Australia were studied by Doczy (1968) who listed, from 14-15 year old boys' responses to open-ended questions: school and education (66%) social interaction outside the home (36%) employment (28%) recreation (27%) finance (26%) parents (24%) girls (23%). Older boys emphasize as problems employment ($p < .01$) and girls ($p < .05$), while the low intelligence group emphasize employment problems (67%).

Intellective Characteristics. The socio-cultural context of aptitude and ability must be recognized if intellective properties of secondary school students are to be understood. Bachman (1970) has assessed the total variance of Quick Test I.Q. explained by background predictors as 35.3, with SEL, Number of Siblings and Race contributing 33%, SEL and Race 31.3%. Contrary to some untested hypotheses, Chase and Pugh (1970) found that I.Q. means the same thing in middle-class and lower-class. Bachman found religious differences in I.Q., highest eta coefficient being with Jewish, Epis-

copal, Presbyterian and Other Protestant (in that order) and lowest with Baptist - thus indicating less selection of intelligentsia by Baptist churches, or more selection of Jewish and Episcopal by the intelligent.

Selection into university and success at university in New Zealand were re-examined by Marsh (1970) who found that, contrary to earlier views, the major non-genetic element in the scholastic ability which he found the causal factor was the quality of the preceding secondary schooling. Somewhat similarly Flanagan (1969) reported verbal tests the best predictors of adult I.Q. in the U.S. Bachman (1970) reported that variance in grades at high school can be assigned in three almost equal parts to the unique effects of intelligence, family background and the effects of family background operating through intelligence as an intervening variable. Total variance on grades explained by I.Q. and family background was 20%, with SEL ($\eta^2 = .26$), Family Size ($\eta^2 = .18$) and Family Relations ($\eta^2 = .21$) the main contributors of family background effect. The main predictor of student self-concept of school ability, independent of social class, is intelligence. (Bachman, 1970; $\eta^2 = .46$)

In a study of high school senior boys (Webster, 1972b) a larger proportion (42%) of grades (defined as School Certificate average scores) was explained than in Bachman, by family background attitudes and intelligence, but 35% was attributable to I.Q. and 4% to 'Liking for Study', with only 3% attributable to SES and family relations variables. Thus Bachman's proportional prediction rule was not confirmed. A greater proportion of School Certificate English scores (54%) was predicted, with I.Q. contributing 49% and family variables 3%. Internal examination average was also best predicted by I.Q. (25%) with family SES and relationship variables adding 6%.

These results point to a high likelihood that while intelligence stands as the prime determinant of intellectual performance, intelligence itself is to a degree an outcome of social influences, and is certainly modified in its effect on scholastic performance by both affective and intellectual influences in home and school. The situation is well summarized by Nesselroade and Baltes (1971) who conclude from a study of ontogenic and generational change in adolescent personality that the nature and status of adolescent personality development appears to be dictated less by age-related maturational components than by the type of cultural ecology which is setting the environmental milieu for all adolescents at a given point in time. One implication is that intelligence and achievement can only be understood in depth in the context of social-cultural influences and as part of total personality functioning.

Non-Intellective Characteristics. This problem will be summarized under 9 headings.

1. Emotional development. Chazan (1968) has summarized factors known to influence children's emotional development as (a) temperamental factors (b) congenital factors (c) physical maturation (d) home background. Special factors requiring more careful notice in the home background were the negative role of many fathers, lack of affection, over strict discipline, proneness of fathers to alcoholism, cohesion of the family, attitudes of parents and social class (7 times as many delinquents appeared in lower manual as in upper middle class). Personality factors in achievement were persistence, independence and lower neuroticism. Incidence of emotional and behaviour difficulties was: maladjusted - 11% of secondary school boys, 7% of girls from 13½-14½ years; 'unsettled' - 19% - 30%. Another approach showed 6% of 10-11 year olds suffered some psychiatric disorder. Chazan concludes: "All the evidence . . . suggests that far more children have serious emotional and behaviour difficulties than had previously been supposed." (p60) Webster (1971) has drawn attention to the absence of curriculum content and teaching practice devoted to the emotional education of children in New Zealand schools. Kearney (1966) cites a list of the non-intellective factors influencing achievement: ability to handle anxiety; self-worth; ability to conform; acceptance by others, leading to self-acceptance; lesser conflict over dependence-independence relations; given to activities centred around academic interests; having realistic goals. Bachman (1970) reported that about two thirds of his 10th grade boys marked positive items on a happiness scale affirmatively while 11% agreed "I feel sad" often or almost always. Happiness and Family Relations related positively ($\eta = .37$) as did Impulse to Aggression and Family Relations ($\eta = .36$). Propper and Clark (1969) found that the alienation syndrome seriously interfered with effective use of intellectual resources in New York affluent underachievers.
2. Attitudes. Bachman (1970, p262) found mean negative school attitudes markedly different in social groups: total, 1.91; whites, 1.90; integrated blacks, 1.76; Northern segregated blacks, 2.12; southern blacks, 2.05; other racial minorities, 2.10. Yamamoto et al. (1969) found that in 800 middle school age students (6th-9th grades) there was a decrease in the favourableness of rating on both curriculum and people as the grade level increased. Girls tended to be more lenient than boys to classmates and teachers but less so toward parents and self. In most instances, teacher received the least favourable rating. Kniveton (1969) found that boys and grammar school students in England were more positive to aspects of their schooling. Light (1970) found in N.Dakota that rural girls internalized

more traditional attitudes through religion and family, were not as influenced by the 'New Morality' and valued education more highly than urban girls. Harrison (1968) found that inconsistency of attainment with that expected from background was associated with attitudes; advantaged unsuccessful students and disadvantaged unsuccessful students had similar attitudes to environment, education, school groups and peer groups. Donaghy (1970) in a particularly thorough Harvard study found that high school students with atypical attitudes toward school and learning were: less integrated in their future plans; more frequently in conflict with their parents; more frequently negative in their self images; and more frequently judged by school personnel to have adjustment problems. Betz et al. (1969) reported that non-college bound, vocationally oriented students saw school personnel as favouring the college bound, counsellors as not helpful, parents as not helpful, and self as deficient. Murray (1970) suggested a non-economic independent variable in reporting sex differences in violent television viewing, with males viewing more; but there was little relationship between alienation and the viewing of violence. Keeves (1972) reported inconclusive results in the study of attitudes in Australian boys as achievement correlates and urged the development of more reliable measures of attitudes.

3. Problems. The Doczy (1968) Australian study has been noted above. Perhaps because problem check-lists, though in popular use, are not easily amenable to research use, little research is to be found on secondary students' problems except by inference. Chabassol and Thomas (1969) compared P.M. Symonds 1936 study of the problems and interests of a sample of urban adolescents in the U.S. West with 1366 grade 8-11 high school students in British Columbia. Topics which had gained in importance were sex adjustments and mental hygiene, while topics such as courtesy, manners and philosophy of life had lost ground. Other areas such as money, attractiveness and recreation remain unchanged. A study of adolescent girls in India (1969) showed that all wished to be healthy and beautiful and the major concentration of problems was in the areas of school and society. Emotional problems seemed to affect their academic achievement the most. (Ahluwalia and Sidhu, 1969)

4. Occupational Preference. Various aspects of the general status and structural determination of occupational choice are extant in research reports. Flanagan (1969) has reported stability of career plans of American 11th and 12th grade students as shown by plans one year after graduation. The overall stability is 19% for males and 29% for females. The most dramatic findings are those reflecting the instability in specific choices. Percentages making the same choice after graduation were as follows:

Mathematician - males 4%, females 3%; biological scientist - males 9%, females 4%; dentist - males 9%, females 1%; nurse - males 2%, females 22%; social worker - males 0%, females 6%; aviation - males 3%, females 1%. In contrast, the most stable choices were: physician - males 40%, females 5%; clergyman - males 26%, females 9%; teacher - males 28%, females 49%; artist-entertainer - males 36%, females 16%; skilled worker - males 24%, females 19%; structural worker - males 32%, females 0%; house-wife - males 3%, females 50%; farmer - males 22%, females 2%. Flanagan comments that the realism of choices seems to be improving; and that other research has shown that family influences are critical in the development of work values of eleventh grade boys.

The processes underlying the varying stability of occupational preferences have been explored in an unintegrated collection of studies. Banducci (1969) studied stereotypic perceptions of types and levels of occupations in high school boys. Lower SES students had more accurate perceptions of lower level jobs; more able students had clearer perceptions of higher level jobs; students with crystallized vocational plans had more accurate occupational stereotypes than those whose vocational plans had not crystallized. In a Swiss study, Girod (1968) found that while school selection does not canalize adolescents too strictly with regard to their future careers as seen at 17 years of age, at 20-21 years old they reflect home background influence in such a way as to suggest that home background has psychologically conditioned the child's career orientation by the age of 14.

The dynamics of occupational choice are complex. Sex role identification is clearly revealed in the contrasting preferences of American male and female adolescents reported in Flanagan (1969). Butcher and Pont have shown that among Scottish secondary school pupils of high ability, the perceived prestige of a job was not highly related to personal liking for the job. Tseng and Carter (1970) found that in grade 9-12 in West Virginia, high achievement motivation and low fear of failure were associated with higher occupational aspiration and higher perceived prestige of occupation chosen. Hollender (1971) found in a sample of 5,200 5th-12th graders, females were more often (69%) positive than males (59%) about vocational choice, while greater scholastic aptitude was associated with increasing vocational decisiveness for both males and females. Navin (1969) reported findings in a study of high school girls of College Preparatory, Vocational and Mixed Curriculum girls in Ohio which suggest greater general maturity in the college-bound girls, though the lower self-concept in girls of higher ability suggests that greater self-demand is associated. Eaddy (1968) found that occupational choices are based primarily upon personal interests, satisfactions and rewards. Stormer (1968) found that rural urban origins and family status

variables were not related to vocational maturity and that 9th grade youth hold the values of self-realization and security high as compared with the values of money, control, prestige, job freedom and activism. Leton and Dodd (1968), in a study of 1005 Hawaiian 11th graders found that career choice was influenced by tradition and ignorance and related to personality needs.

The subject of vocational education is unavoidably associated with the occupational preference problem. A 10 year study (Bender, 1969) showed that in the U.S. students who have studied vocational agriculture in high school achieve as well or slightly better in college than others. In a 10 year study, Bender found that over 40% of high school graduates in vocational agriculture were engaged in farming or related occupations. Warren (1967) placed vocational education in the framework of essentials in planning equality of educational opportunity for students of varying abilities and socio-economic levels. Hanson (1968) found that group counselling of 11th and 12th grade Colorado boys helped develop realism of occupational preference in 'overshooters'.

Venables (1968) argues that English schools fail to help students choose an occupation realistically and argued that schools must help students to be aware of themselves and to be self-educators. In India, Shanthamani and Hafeez (1970) found that among 200 graduating high school students, most Ss liked engineering, technical and other skilled jobs and the majority were unaware of the training facilities available when they left school.

Little research is to be found on the prediction of career success. Cox (1968) tested 148 hypotheses related to vocational success of 518 post-high school students in private vocational training institutions with a 5th year mailed follow-up questionnaire. Using correlations, multiple regressions and the eta statistic, he found that it is almost hopeless to try to predict global success indicators from school predictors. Prediction of career choice suffers a better fate, with successful prediction of high school female seniors' career choices from their 9th grade interests, career plans and aptitudes, prediction being improved by adding selected environmental characteristics of the school attended.

5. Aspirations and interests. This category is not easily initially distinguished from that of occupational preference, but examination of the literature points to the breadth of the problem as distinct from simple occupational preference. A number of studies are basically descriptive. Ben-David and Adler (1970) studied two cross-sectional samples matched on relevant descriptions of 11th grade students in different types of high school in Israel and a sample 10 years older and found great stability

through time in the attitudes and occupational behaviours of given groups. The actual number expecting different levels of education and occupation varies widely from country to country. Bowles and Slocum (1967) found that over 75% of high school students in Washington state aspired to post high school education; 40% expected a degree. Similarly in Florida the State Board of Regents (1970) found that about two thirds of high school students intended full-time or part-time tertiary education. Whites (67.7%) exceeded blacks (60.1%). No comparable New Zealand data exist, but from general policy it is to be expected that only about one third of the age-group are in the 4th and 5th years of secondary school, and only about half of these or about 16% of the total age-group will enter tertiary education. Realism of aspiration is possibly at a higher level than in the U.S. as a result of the lower tendency to equate success with tertiary education. In contrast, realism is a marked factor in the U.S. Clark (1965) found that evidence for sub-cultural opportunity-based depression of aspiration existed among negro youth in New York, boys expressing lower occupational aspiration than girls.

It is to be expected that social and educational advantage will relate to aspiration and interests. Forcese and Siemens (1965) found that school related factors affecting aspiration were I.Q., teacher encouragement and participation in extra-curriculum activities. A good predictor of aspiration was first-year high school grades. George (1970) in a study of 1,609 urban and non-urban Canadian high school students, found that upper class, urban male students whose parents show interest in their educational aspirations and who perform well in college-oriented curricula have the highest aspirations. George concluded that the education system, in favouring this group, is far from democratic. Bishop (1966) in a Virginia Polytechnic Institute study found likewise that level of living had the greatest influence on plans, with higher level of living and female sex most related to higher educational aspiration in a sample of rural youth. Sperry and Herrin (1967) in a comparison of urban and rural youth in North Carolina found that youth with higher level-of-living families communicate better with their fathers on educational plans. Rooman and Voydanoff (1968) showed that the effect of the differing social class influences was probably greater clarification and differentiation among careers by higher SES children, since social class of parents was inversely related to width of range of aspirations. The peak of lower class aspirations was the same as that of middle class. Tseng (1971), however, found that academic success was independent of social class as an influence on academic motivation which was higher in lower-class 12th graders than in lower class 9th and 10th graders. Lower class in general, however, with aptitude controlled, was

associated with lower academic motivation. Thorpe (1969) tested whether class or race was more decisive in occupational aspiration and found that by disregarding race the patterns of white high school students' aspirations could be seen as reflecting social class. Negro patterns were different, with sex rather than class dominating, in favour of girls. Schafer and Rehberg (1970) found that athletes are favoured by teachers in New York state high schools and athletes more often report college plans, even with social class influences controlled.

Few studies are to be found analysing non-status factors in interests and aspiration. Webster (1972b) reported data showing that:

1. Physical education students in teachers college have more sociable interests than music students and humanities students.
2. The main differentiating characteristic of teachers college students was degree of religious interest, with high religious interest males more studious, art-oriented and social service oriented, while high religious interest females were more sociable, and music-oriented.
3. No differences in aspirations and interests were found between high school seniors from schools of different social class characteristics.
4. Expressed liking for study was the best predictor, after I.Q., of school certificate average score in boys and still more strongly in the prediction of internal examination average and of educational goal.

Psychological factors underlying aspiration level were examined by Stone (1971) in Arizona high school students. Those who expressed internal control, were future and present oriented and had adequate achievement and reality orientation and were more likely to hold high but realistic aspirations. Lower SES students had lower internal control and held lower educational aspirations. Tillery (1968) found in a questionnaire study of 3986 high school boys and 4079 girls in California grade 10 classes that the high-aspirers had higher adult-orientation as expressed in student's ratings of person who helped them most.

6. Satisfaction and happiness. No mentions of happiness or satisfaction are to be found in volumes concerned with social environment influences on secondary pupils such as Campbell (ed., 1970) or Hargreaves (1967). This cannot be because this subjective experience is unimportant. Indeed, as Webster (1971) has argued, happiness is, from the individual viewpoint, the main evaluative criterion of education. Limitations of measurement and research method are doubtless the reason for lack of attention to the question. Furthermore, much research (e.g. studies of anxiety) deals with happiness obliquely or by implication. Nevertheless a few worthwhile

North American studies are to be found. Erlick (1970) carried out a study of 12,000 respondents in a representative national sample of American high schools to discover how many students are dissatisfied with their education. Up to 40% of students agreed with highly critical statements from the Students for a Democratic Society (e.g. schools are factories.) About two thirds agreed with less extreme criticisms. Diedrich and Jackson (1969) found that satisfied high school juniors are seen by teachers as less impulsive and more responsible. Thompson and Gardner (1969) examined high school students' perceptions of happy successful living. Delinquents assigned greater weight to behaviours associated with the need-strivings of dominance, aggression and exhibition, while non-delinquents gave greater importance to nurturant, deferent and affiliative behaviours. Heuser (1971) found that the main factors contributing to satisfaction among high school students were recognition, achievement, subject matter and interest, while factors relating primarily to dissatisfaction were school policy, fairness and teacher-administrator functions. At eighth-grade level, according to Cullen (1970), the components of school satisfaction were teacher, teacher-student, student-peer, subject matter difficulty and subject matter interest. Race and socio-economic status were significantly related to the first four research variables. Lieberman (1969) factor-analyzed aspects of high school student playfulness as evaluated by teachers, producing a two-factor solution: social-emotional playfulness and academic playfulness, the latter being more teacher-approved. Boys were rated more playful than girls.

7. Values. Keeling and Nuthall (1969) in a study of changes in personal value-structure during early and middle adolescence in students of Christchurch high schools found indications of a higher value on independence in high-ability pupils. Family values, however, are higher in third forms, in girls, and in average rather than above-average pupils. High ability pupils valued achievement goals, whereas girls of average and below average classes put more emphasis on getting on well with teachers and older people.

A methodological note from Dyer (1969) indicates a high correlation between values judged from student essays and those from standard inventories.

Larson (1968) found some support for the hypothesis of disproportionate influence of values of members of primary groups upon those of high school students.

8. Social-Political Views and Involvement. The nature of political-international concerns of youth has been definitively studied. Three

American studies yield some light on the subject. Bachman and Van Duin (1971) reported analyses of data from 2,200 young men. Major findings were, in 1970, that Vietnam is the No. 1 U.S. problem; there is increasing mistrust and cynicism about government; young people overwhelmingly support the 18-year-old vote; race is still a problem but further government intervention in race is not the solution; many young men support firmer police and court action against crime and violence; pollution should be dealt with by stronger laws, rigid enforcement and stringent penalties; contraception is the answer to over-population.

Thornburg (1969) in a college student survey of contemporary issues found that concern about themselves took precedence over domestic and international issues. Education, Vietnam, sexuality, draft and occupation were the five leading areas of concern.

Boulding (1971) found that college students are generally optimistic about the future in areas where they felt they could make a personal input.

A few studies of dissent and conformity have reached research journals. Morgan (1971) looked at high school educators as a potential factor in student experience with dissent and from the fact that the most accepting in their attitudes were young, female, counsellors and teachers, and the least accepting were middle-aged, males and principals, concluded that there is a sort of generation-sex-and-position gap within high schools among professional staff over issues of change and dissent. Jackson (1970) conducted at Reading University a comparative study of research findings from U.S., Britain, Mexico and Germany, concluding that children are conformist vis-a-vis adults and that as they grow older their political choices become more realistic and leaders appear less benevolent. Choice of exemplars is strongly influenced by school curriculum. Jack (1969) showed some evidence that children in Wisconsin resemble their parents in political orientations. Dawson (1969) found that in the absence of information both open and closed minded high school students tend to choose in accordance with authority.

The unsystematic nature of political socialization in democratic societies is reflected in the literature - initially in that there is little research on the matter. Campbell (1969), seeking to learn what teenagers read in the hometown daily newspapers, concluded that students do not read newspapers very intelligently. Ehman (1969) found that exposure to social studies classes alone has little apparent relationship with students' political efficacy but that in an open classroom atmosphere, exposure to controversial issues is inversely related to political cynicism and directly related to political efficacy, participation and sense of citizen duty.

A number of studies show that social status variables are independent influences on political socialization. Jimenez (1971) concluded that older students and whites are more positive and more teachable in political issues and that there were no sex differences. Vanfraechem (1968) in a study of Belgian secondary students in the first and second years of high school found that boys know less about the rights and duties of women but more about the political basis of society. All Ss agreed that girls have little interest in politics. Van Horn (1969) confirmed in a U.S. high school comparison of children of well-educated and poorly educated mothers, there were large differences in party preference and in the specific implications of abstract social ideas.

Cross-national differences in political socialization are apparently very considerable. Langton and Karns (1969) carried out a very sophisticated study of the relative influence of school education in Germany, Great Britain, Mexico, Italy and the U.S.A. Using the theory that the 'face to face' environments of the family and the job are more influential than the 'broader, less intimate school environment' in developing a sense of political efficacy, the authors found that the family is the strongest socializing agent. This was especially so with the movement from medium to high sense of efficacy. The least educated are more influenced by the job, the most educated by the family.

Adelson (1968), studying English, German and American youth from pubescence to late adolescence, found considerable evidence for active motivation of political perspectives. There were important national differences in perspectives on law and government: German youth were authoritarian, stressing that people need law and guidance to save them from confusion; English youth seemed to see government as both a stern headmaster and a providing Nanny; Americans were the least authoritarian, and were concerned primarily to find a workable compromise of individualism and communal responsibility. A conceptually similar study (Bush, 1971) studied adolescent political thinking in American, British and German samples. Developmental differences were noted in that younger children focussed on the visible, immediate, personalized and tangential aspects of problems, while older adolescents' thinking showed time perspective, ability to take into account the needs of the community or group and a reliance on institutionalized and instrumental concepts. Older age was associated with increased democratic thought, greater distrust of authority and decreasing emphasis on aggression. Cross-cultural differences emerged: Americans were more group-minded and manifested more mistrust of authority, with more focus on individual than on institutionalized channels for action; Germans were

more authoritarian at younger ages as compared with British and American; their primary concern revolving around avoiding disagreement and maintaining unity and often uniformity. Germans were more committed to political parties, which that author suggests might mean that a formalized structure of opinion differences enables these adolescents to tolerate some degree of conflict.

Special Categories

To do justice to the literature it is necessary to create separate categories for sex differences and several behaviour groups, viz. delinquents, drop-outs, achievers and religious, smoking and consumer behaviours.

Sex differences. A definitive review of literature has been carried out by Garai and Scheinfeld (1968). They list fourteen reasonably well established points:

1. The male is inherently stronger, heavier, taller, more active, more aggressive.
2. The male is more susceptible to genetic defects and diseases and less resistant to most biological hazards.
3. The male matures more slowly, reaching puberty $1\frac{1}{2}$ - $2\frac{1}{2}$ years later and physical and mental maturity 3-5 years later.
4. The more prolonged maturation of the male gives greater opportunity for the development of physical skills.
5. The male organism has an "activity orientation" to the environment, the female a "response orientation", i.e. an innate tendency to "act upon" vs. "react to".
6. Males display, from infancy, greater interest in objects and their manipulation; females in people and personal relations.
7. Males display, from early childhood, greater achievement needs, females greater affiliation and social needs.
8. Males display greater intrinsic achievement motivation - satisfaction with the task itself; females display greater extrinsic motivation - greater satisfaction is gained from the praise and recognition given by other people.
9. Males are superior in verbal comprehension, verbal reasoning, arithmetic, mathematical reasoning, spatial perception and orientation, speed and accuracy of reaction to visual and auditory stimulation, mechanical aptitude, and problem-solving ability; females are better in verbal fluency, correct language usage, spelling, articulation, manual dexterity, perceptual speed, clerical skills and rote memory.
10. The male superiority in abstract reasoning and conceptualization

increases with age, contributing to the outstanding achievement of men in science, philosophy and theory construction.

11. Males and females use different abilities in their approach to mechanical, spatial, mathematical and science problems. Women use narrower categories and give more attention to detail, using fewer spatial cues; men employ broader categories, give more attention to the whole configuration, and use a greater variety of spatial cues.
12. Males manifest, from infancy, a greater interest in novelty and complexity, which contributes to the universally observed greater creativity of males in all fields of art, science, literature, music, philosophy.
13. Non-intellective variables such as aggressiveness, anxiety, achievement needs, affiliation needs, impulsivity, affect males and females differently in their intellectual and occupational performance.
14. Males achieve masculine identification and life satisfaction as a result of occupational success, or in creative pursuits, while "intimacy with a loved person" appears to play a secondary role. (p271). Females achieve feminine identity and life satisfaction primarily through intimacy with a loved person. The authors note: "These 14 points are interrelated and appear to be sufficient to explain most manifestations of sex differences . . ." (p271). They discuss implications for encouragement of achievement motivation; for co-educational vs. single sex schools (coeducational school good for girls' affiliative needs but perhaps less suitable in that girls are more easily discouraged by competition); differential teaching and learning by sex; defeminization of the classroom; encouragement of female science contribution; encouragement of female creativity; elimination of the sex bias in grading; educational reforms favouring women.

Flanagan (1969) has pointed out that the sex differences in ability relate more to interests than to basic aptitude: thus the superiority of males is not nearly as great in physical science information as in related non-academic areas such as electricity and electronics. He also notes in regard to the mechanical field that the sex differences are much greater on those tests in which activities and experience make the largest contribution to the score. Flanagan confirms essentially the Garai and Scheinfeld conclusions in noting that girls are superior in information in music, art, architecture, theatre, foods, etiquette, home economics, and colour names, and perform better on tests of language skills including English usage, capitalization, punctuation, spelling and expression. Shaycroft (1967) tested growth in cognitive skills in some of the Project Talent sample after a three year period in high school. Boys showed larger gains than

girls in the four basic tests: creativity, arithmetic reasoning, abstract reasoning, and visualization. Flanagan, reporting Shaycroft's findings, comments that they raise some important questions about the appropriateness of the content of secondary education as now being given to American girls.

Further on sex differences, Crandall (1969) reports that girls give lower estimates than boys of their own intellectual and academic capabilities; boys are over-optimistic, girls become increasingly pessimistic the higher they progress through college; girls' estimates of their own capability in new intellectual situations are relatively lower than their past performances would indicate, while boys' are correspondingly higher.

Sweely (1970) found in a study of 12 year olds that girls had a significantly higher self-concept than did boys. Keeves (1972) reported that at primary school the girls had shown more favourable attitudes than boys and were slightly superior in reading. In the secondary study boys had better attitudes to science and mathematics and better achievement than girls in the science test. Girls had greater liking of school and school learning than did boys. Keeves considered the differences too small, however, to warrant separate analyses for boys and girls.

Delinquency. The official definition of a delinquent in New Zealand is one between 10 and 17 who is charged with offences (other than murder, manslaughter and minor traffic offences) under N.Z. law and is brought before the childrens court. The 1972 report of the Child Welfare Division in N.Z. gives the following figures:

- (a) rate of delinquent court appearances per 10,000 head of population:
 - in 1969 - 157
 - in 1970 - 199
 - in 1971 - 231
- (b) the ratio of boys to girls is 20:1
- (c) the highest incidence is 14-16 year old boys

Oram (1969) dismisses genetic influence as a major factor in N.Z. delinquency. Taylor (1968) reported that delinquent N.Z. boys were high neurotic and high extravert; delinquent girls were high neurotic, low extravert. Schumacher, studying N.Z. violent offenders found low self esteem and high unpredictability. (1971)

Polk et al. (1969) classified delinquents as (1) situational, (2) neurotic, (3) pseudo-socialized, and (4) psychopathic. They rejected the "environment only" explanation, since a heterogeneity of psychological problems, especially neuroticism and deficits, was observed. But they

denied also a "neuroticism only" theory, since some delinquents have strong ego but low values. They prescribed situational treatment for the situational delinquent, therapy for the neurotic, behaviour alteration for the pseudo-socialized, and institutional treatment, initially in isolation from other delinquents, for the psychopathic.

The social environment of the delinquent is obviously implicated. Hanan (1968) summarized what was known in N.Z.:

"We cannot escape the consistent evidence . . . that insufficient parental care and affection, an unacceptable code of behaviour derived from parents or peers, difficulties in learning that eventually become inability to learn, a lack of training for work and leisure, combine to produce a sense of inadequacy, frustration and resentment. This is either turned inward in self-destruction or outward in aggressive, defiant behaviour that flouts the laws of society."

Hanan does not offer a psychological account and it is left to the reader to wonder what, in the home background perhaps, determines whether the frustration is turned inward or outward. Bachman (1970) found that the only background factor related to delinquency was family relations ($\eta^2 = .33$). Rebellious behaviour at school was highly related to delinquency ($r = .52$). Duncan (1971) reports the differentiating characteristics of the parents of non-delinquents: higher activity level, less rejection, higher parental adjustment, lower consistency of controls, but higher consistency of feelings. Parents of social delinquents display higher levels of activity and are more restrictive than individual delinquents' parents. Fathers of delinquents advocate more use of authority, are more restrictive, demand more conformity, give freedom and low affection. Becker (1964) has summarized studies showing that delinquency may be expected with hostile-permissive parents. Rollins (1967) has suggested a 'low power, low support, low anxiety' parent as allowing maximum psychological deficit in the child.

The identification and prediction of the delinquent are rather tangled procedure because of the many isolated agencies involved in helping or correcting them, and the resulting heterogeneous emphases made. In this connection, Wall (1968) stresses the strategic role of schools, in contrast with the earlier problem of delinquency being lost in the bureaucracy and in the filing systems of disparate welfare and correction agencies. Wall sees the real possibility and need in schools of the detection of pre-delinquents and of constructive intervention with a minimum of expert outside help. In this connection Benning (1968), reporting extensive longitudinal and preventive research, has concluded that teachers can nominate delinquents and that delinquents can respond normally to a careful programme. Benning et al. (1970) concluded from a five-year study of the predictive efficiency of the Kvaraceous Delinquency Proneness Scale that

this scale was useless as a predictor of delinquency defined as contact with law enforcement officers. Since neither the KD scale nor the School Interest Inventory (Cottle, 1969) go far in prediction, there is obviously room to work in reverse order - study the delinquents and find out empirically what characteristics in a multivariate battery distinguish them. This is the epidemiological approach and will be discussed in more detail in a later section.

Drop-outs. Information on dropouts tends to repeat to an extent what has been reported on lower social, disadvantaged, underachievers and delinquents. In terms of social context the non-dropout was supported more by family and peers (Dager, 1968). Family environment, not personality (OPI), relates to dropout propensity (Cohen and Brawer, 1968). Dropouts as a group had parents of lower education, lower fathers occupation, received less encouragement from parents in regard to education, perceived relationship to the father as less fruitful, perceived the father's attitude toward them as less accepting, higher in avoidance, showed lower level of achievement motivation, had lower accuracy in perceiving the occupational prestige hierarchy, had lower occupational aspirations and chose occupations lower in difficulty level, responsibility and prestige. There were significant differences too in parental interest, fear of failure, and self-esteem. (Tseng, 1970) In Massachusetts it was found (Curley, 1971) that school leavers tended to belong to lower class, had greater absentee rate, had more academic difficulty and failure, had been kept back and were more negatively evaluated by their teachers. While it would appear that school leavers left of their own choice, interviews revealed that leavers and their parents were given the choice of "orderly withdrawal or suspension". Parents also discussed their futile efforts to have the child's programme altered. A Hawaii State Department of Education survey (1968) revealed that dropouts were similar in academic ability, character traits and family background to the lowest 20% of high school graduates. Davidson (1970) in Texas found that the reasons given for dropout were over-age, pregnancy, poverty.

Personality and attitudes of dropouts have received considerable attention. The dropout feels helpless, has few values and is more self-centred (Barclay and Carvantes, 1969); is more negative in attitude and values (Renfrow, 1968), more anxious (Chedekel, 1971), more negative if white (Anderson, 1968).

The lower class dropout can be easily predicted from knowledge of age, I.Q., arithmetic achievement and fathers occupation (Walters and Kranzler, 1970). But early identification of the middle-class dropout is very difficult, since he tends to perform at acceptable levels. (Call, 1969)

Achievement motivation. As this review is concerned with recent research studies relevant to educational outcomes, there is no attempt here to deal with the large and vigorous literature on achievement motivation as a psychological construct. A very clear outline of current theory is found in Johnson (1970, pp100-123). Rousseau (1971) has shown recently that the important sources of reward for academic motivation are in the various relevant interpersonal relationships rather than in the various structural characteristics of the community and the family. Ringness (1970) found relationships of identification and achievement values that led him to a social learning paradigm for 8th grade girls.

Psychological factors in achievement motivation have been investigated by Distefano et al. (1970), who found that attitudes toward achieving success become stronger with increasing age in high school students. Oakland (1969) found correlations of low to moderate strength between grade point average and scales of the Edwards Personality Inventory measuring such personality qualities as intellectually oriented, cultural interests, leadership, perfectionist, plans work efficiently, to assume responsibility. Poe (1968) found n-Achievement and Achievement behaviour related positively to internal control of reinforcement. Russo (1970) found evidence for a relationship between dogmatism and academic achievement in American male academic high school students.

Religion. Few systematic studies of religion variables are to be found in the ordinary indexes and journals of research on secondary education and adolescents. Webster (1971) has drawn together in a discussion of current youth styles the views of several theorists treating aspects of the adolescent identity quest as a religious phenomenon:

"The probability of early scrupulosity in some hippies, beat prophets and existentialists seems quite high. Both Erikson and Matza see both the existential and the religious versions of the identity crisis of the scrupulous as essentially the same." (pp251-252)

In this connection, Webster and Stewart (1973) have found, in a sample of New Zealand ministers, evidence for a conservative - liberal polarity which is associated strongly with more general conservatism - liberalism of personality and social attitudes. Little study of these dimensions among adolescents in N.Z. is, however, to be found at the level of journal reports. Black (1970) studied pupils' attitudes to religious instruction in New South Wales secondary schools, using a questionnaire study of 3,002 pupils in 109 Scripture classes in 63 schools. Main findings were that girls had more positive attitudes than boys to the Christian religion; girls had a more positive attitude than boys to aspects of religious instruction in schools, but the difference was much less marked; positive attitudes to

religion and religious instruction declined, and negative attitudes increased, from first to fourth form, but sixth form boys tended to reverse the decline in regard to both religion and religious instruction, while fifth and sixth form girls tended to reverse the decline in regard to religion but not religious instruction. Dunn (1971) found that American high school students classified as highly religious appeared to possess the traits of responsibility, socialization, self-control, and achievement via conformance to a higher degree than the less religious. In factor analyses of attitudes, beliefs, abilities, performance and social origins of senior high school boys and first-year teachers college students, Webster (1973) found that in male college students, liking for religion was loaded quite highly on a "professional orientation" factor, while not loading significantly on any factor for the female students. In the senior high school boys, liking for religion was the third strongest component after liking for study and liking for school in a "studious-religious" factor. Thus the conformity element in N.Z. adolescent religion at least for males is suggested. It has been found (Webster, 1972b) that the more religious female college students do not share any distinctives of the more religious male, but are characterized by higher father's occupation, greater liking for own sex, greater liking for music, greater respect from father, greater respect for mother, greater warmth of family relationships, greater warmth-permissiveness, less inner support, and lower feeling reactivity. It appears likely then that religion betokens a studious somewhat socially isolated conformity in male adolescents, but a middle class, supportive, dependency-encouraging socialization in the female.

Smoking. Hargreaves (1967, 116,145) has shown clearly that smoking is more common among the delinquent pupils at the English secondary modern school, and that the higher the stream, the greater the tendency of parents to be less permissive about smoking. Newman (1969) studied American teenage smoking as compensatory behaviour, finding that 9th graders who smoked did not feel they came as close to meeting their parents and schools expectations as did the non-smokers. Newman argued for an attack on the cause of the problem, namely the feelings of failure, rather than smoking, which is the effect.

Personality traits. It is virtually impossible to discuss norms and baselines for personality traits in New Zealand. Normative data on an agreed range of operationally defined traits are not in existence. We are left with comparisons and relationships of personality traits with other populations and adventitious variables. Flanagan (1969) reported major trait

characteristics of American youth. Rural youth are less sociable. Girls are more sociable than boys and describe themselves as having more culture, greater social sensitivity, more tidiness and a more mature personality than boys. In the study referred to (Flanagan et al., 1969) both boys and girls tended to describe themselves as sociable, showing social sensitivity, more deliberate than impulsive, only moderately vigorous, calm, fairly tidy, more of a follower than a leader, having only a moderate degree of self-confidence, but having a relatively mature personality. Astington reported by Flanagan as finding that British grammar school boys with the best relative academic achievement received higher ratings on persistence, independence and interest and considered themselves less extraverted and less sociable than did their fellow students who performed less well academically. Hallworth also is reported by Flanagan as finding from an analysis of the ratings that housemasters assigned to British pupils for 14 traits, that two factors accounted for most of the variance: a 'sociability' factor and an 'emotional stability' factor. Finally Cattell and Coan⁽¹⁹⁵⁷⁾ are reported as finding the same number and essentially the same primary personality factors in studies of adults, 11 year olds and 6 and 7 year old children.

The question of personality structure arises. Hundleby and Cattell (1968) set out to check intensively the nature of the factors of personality in 12 year olds and to relate these to criteria of interest to the educator and to home and family background correlates. 141 boys and 132 girls in Illinois were tested, and the sample is seen as representative, since all the age-group in the town were studied. From a total of 261 scores a final set of 69 variables was selected for factor analysis. The main factors of the 17 rotated out of the 24 indicated by the number of eigen values are:

- (1) Perceptual tasks; correlating with better arithmetic and science;
- (2) General intelligence; correlating across a wide span of achievement criteria, and correlating modestly with higher SES, fewer schools attended, less delinquency or truancy, less tendency to have at least one step-parent;
- (3) Naivete; correlated with verbal ability, lower work habits; (4) Suggestibility; correlated at a low level with educational achievement; (5) Ideational fluency; correlated with "an impressive array . . (of) educational criteria"; (6) Aggression; correlated with poor achievement; (7) Cautious competency; correlated highly with school achievement and teacher approval; (8) Anxiety; low, negative correlations with achievement criteria and ratings of school behaviour. Other factors of less interest to this researcher appeared. The titles given above are derived by the present writer from the factor descriptions and are not claimed with quite this certainty by Hundleby and Cattell. Nevertheless they must be taken as

provisional findings relevant to the present study. Highest estimated correlations with general achievement were with Factor 1 (perceptual tasks; $r = .45$); Factor 2 (general intelligence; $r = .61$); Factor 5 (ideational fluency; $r = .52$). Highest estimated correlations with ratings by teacher as a behaviour problem were with Factor 2 (general intelligence; $r = -.35$); Factor 4 (suggestibility; $r = -.31$); Factor 5 (ideational fluency; $r = -.35$); and with Factor 7 (cautious competency; $r = -.33$). The only significant factor correlate of higher socio-economic class was Factor 2 (general intelligence; $r = .26$).

Cattell and co-workers (1970) have recently assessed British adolescent personality structure in Q-data with the HSPQ to find the number of primary factors and their consistency with published HSPQ scales. High consistency was found for the 14 scales, with little deviation from already established structure.

The influence of social context on personality factors is already implied above. De Blassie et al. (1970) compared Spanish-American, Negro and Anglo adolescents across ethnic, sex and socio-economic variables on 14 indices of self concept and found little effect of ethnicity, none of SEC and some effect of sex. Male Ss had higher self concepts than female with regard to physical appearance, health, skills and sexuality. Bachman (1970), however, using need for self-development and self-actualization, found that family background measures and intelligence accounted for about 12% of the variance in the need for self-development and 10% of self-utilization. Cook (1969), examining the influence of disadvantage on self concepts of high school students, found that disadvantaged felt less adequate in social interaction. "Rural depressed" Ss had more positive self concept than "affluent suburban". The disadvantaged in a rural non-depressed area experienced the greatest negative self concept.

Studies of the self and of other ego-strength constructs have, of course, gone on in the schools. In contrast with Bachman's finding that intelligence accounted for 12% of variance in the need for self-development, Webster (1972) found that I.Q. contributed 44% prediction of ego-independence in male teachers college students. Coopersmith (1969) has argued that since high self-esteem is correlated with achievement and low self-esteem with fear of failure and both of these are self-fulfilling prophecies, therefore educational techniques should foster self-esteem. As with the Webster finding, however, it is at least as feasible that ability produces the ego-strength as that ego strength is a cause of intellectual growth. The self construct is clearly important, however. Warner and Hansen (1970) found that in high school students self-esteem

is negative to alienation and anxiety. Ziller (1969) found self-esteem central to integration of the self concept, with greater complexity of self concept being evident in persons with wide acceptance by others.

Motivational traits have been much more difficult to predict than social behaviours. Bachman (1970) was able to predict only 2% of n-Affiliation and $\leq 1\%$ of n-Achievement from family background. But achievement behaviour was successfully related by Gill (1969), among 1,424 Canadian 9th graders, to self concept, including acceptance of self by peers and teachers. In a later study, Gill (1971) found confirmation that self-ideal incongruence is associated with under-achievement. Purkey (1968) had rather weak results, however, from a programme intended to improve school performance by a self-discovery project. Likewise Thomas (1964) reported as ineffective an experiment in which use of simple positive evaluation of low achievers by an 'expert' was the operative device.

One problem, of course, is the unknown stability of self concept phenomena. Bothwell (1967) concluded a 10 year Ph.D. study with the conclusion that from 15 to 25 years of age there is very little stability in self concept data. But at the time, it is obviously important, as has been shown by Gabel (1971) and Lucas (1968). Some unexpected findings emerge, as in Soares and Soares (1970) who report that self concept is higher in disadvantaged than advantaged children at all ages, and furthermore that there is a decline in self concept for all groups in high school as compared with primary. Superior ability, rather than social class appears to assist independence, aggressive outlook and responsibility (Smith, 1962). Similarly Kearney (1966) found that four CPI scales - tolerance, self-control, self-acceptance and achievement via independence - delineate the high ability older adolescent. Newlon (1968) likewise found that self-actualization was greater with higher intelligence.

Other studies reveal the complexity of personality-behaviour dynamics. Karasick et al. (1968) found no personality distinctives in high school leaders. Sharma (1970) reported a curvilinear relationship between anxiety and achievement scores. Zais (1969) reported that personality was not a factor in reading sophistication. Sax (1970) found that the only large difference between the educationally deprived and non-deprived was in intellectual achievement. It might be noted, however, that were the definition of educational deprivation that of personality deficit, then the differences would be in personality traits. Even so Hollon (1970) found evidence of masked depression in school pupils performing poorly at school. Some causative factors of severe anxiety were suggested by Berg and McGuire (1971) in a study of 11-15 year old British school phobic children, the

evidence showing that phobic Ss were less sociable and more immature than controls and were over dependent on the mother in personal activities and household tasks.

Factors and Predictors of Secondary School Outcomes

Factors. A major problem in any attempt to answer the question of classification or taxonomy by factor analysis is the identification and measurement of the variables which exhaust the domain. Chambers (1969) has explained the issues, objectives, conceptual bases, methodological bases and problems of classification involved in the development of a classification of human performance. Most field studies such as educational studies aspire to something less than an exhaustive set of variables, being content primarily with manifest performance and Q-type traits.

One of the major attempts at measuring adolescent personality is Project Talent (Lohnes, 1966). Using a trait and factor approach to personality theory, Lohnes presents a rationale for the inclusion of educational achievement traits, differential aptitude traits and need and interest traits within one matrix for factor analysis. He used also the notion of factor indicators, employing the 'best indicator' of each of a number of factors in correlation to get an estimate of inter-factor relationship.

A number of studies (Evans, 1970; Keeves, 1972) have concentrated within certain areas of ability and have not attempted to define factors in the broader range of cognitive and affective traits. Others, such as the Hundleby and Cattell study discussed above have attempted to exhaust the basic or source traits without incorporating abilities, surface traits or social adjustment. A rapid look at leading studies will show that certain consistencies exist when those pupil properties commonly regarded as socially important are used in factorial studies.

Strowig and Alexakos (1969) found separate aptitude and achievement factors in high school seniors. Sumner and Warburton (1972) factor analyzed intellectual and non-intellectual variables in a large British sample and found 20 factors explaining 66% of common variance. The first 10 factors, containing over 40% of variance, were: (1) Scholastic Aptitude; (2) Commitment to Schoolwork; (3) Scientific vs. Aesthetic Temperament; (4) Self-sufficiency vs. Extraversion; (5) Literary Arts Bias; (6) Concerned Home Climate; (7) Outdoor Bent; (8) Literary vs. Technical Bias; (9) Resilience; (10) Appreciation of Human Relationships. Olsen (1957) studied 250 Australian first-year university students in science and mathematics and found four principal factors: (1) Scholastic Attainment; (2) Speed and Accuracy; (3) Introversion (characterizing the successful student); (4) Mathematical Ability. Bloom (1968) analyzed the dimensions of adjust-

ment in adolescent boys, using 40 self-report variables from Bachman's 2000-plus 10th grade boys. Seven factors were extracted by orthogonal rotation: (1) Negative Affect; (2) Aggressive Impulses; (3) Physical Correlates of Emotional States; (4) Breakdown of Sense of Attachment to Society; (5) Positive, Optimistic vs. Pessimistic, Negative reactions to self and circumstances; (6) Test Anxiety; (7) General Anxiety and Guilt. Bloom considers there may be a generalized distress response and that Factor 1 may typify that segment of the population who view their adjustment in this global fashion. McGuire (1970), searching for factors associated with the educational utilization of human talent, found these factors: (1) Age-mate Acceptance; (2) Neurotic Anxiety; (3) Convergent Thinking; (4) Peer-Evaluated Impulsivity; (5) Competence Motive; (6) Energetic Awareness; (7) Symbol Aptitude; (8) Peer Stimulus Value; (9) Status Anxiety; (10) Peer Visibility; (11) Divergent Thinking; (12) Peer Isolation; (13) Amoral Self Gratification; (14) Reactive Passivity; (15) Authoritarian Socialization, or Alienation Syndrome.

The question of the actual feasibility of employing multivariate methods involving potentially unstable traits of adolescents was approached by Summers, et al. (1971) who examined the stability of the structure of work motivation in 723 high school students. The structure found among college students and college trained employees was found well developed at high school level. The relationship of work motivation to personality variables and to aspirations was also clear.

Social Predictors. Addressing the enormous current use of social class 'measurement' as an explanatory factor in educational adaptation, Swift (1970) observes that "social class" is a blunt weapon. While it has shown that the impact of the system of formal education differs in different strata of society, a gross term like social class or occupational status cannot be taken as a factor influencing school work.

"When we are discussing how a particular environment affects an individual, the term is a summary of a whole matrix of other things rather than a thing in itself." (p285) As structures, social classes do not have "effects". Their value in research terms is in allowing variables to be grouped. "Each social class is to be looked upon as a unique association of variables . . . A factor which is important to educational achievement in the lowest social class may be irrelevant in the middle stratum." (p290)

The fact remains, however, that the social class variable continues to be a useful predictor. Part of the answer to the question raised by Swift is suggested by Shulman (1970) who advocates the "epidemiological" research strategy, the backward study of two groups, one which is affected, the other not, to find differences.

"From such analysis hopefully would come working hypotheses about kinds of purposeful differences in treatment one might develop . . . to raise the probability of . . . the development of socially acceptable behaviour patterns in future individuals. These hypotheses could in turn be tested in long-range experimental programs." (p384)

The advised strategy could well be one of compromise then, in which it is recognized that insofar as social class variables do yield significant predictions (which they do), these are in fact hypothesis-generating rather than explanatory. Shulman proceeds forcibly:

"Educators have for too long used only armchair or laboratory-based theories for generating hypotheses, or the residue of many years of intuitive experience rather than systematically gathering careful descriptive data to generate working hypotheses. Such epidemiological strategies could be extremely useful as the early stages of a complex program of educational research. The critical attribute of such a strategy is examining in detail the background variables which distinguish effective from ineffective performers in a particular domain for the purpose of using such discriminators as the basis for creating experimental treatment or training programs." (p385)

In similar vein, Harp and Richer observe that the sociological analysis of education is first committed to social interaction, and must examine "the very nature of the civilization that education transmits and the mechanisms it employs to transmit it." (p674) The units of analysis, these authors explain, vary according to the type of analysis. All sociology of education deals with collectives and there are three classifications of properties of collectives: analytical - a summary measure of the characteristics of individuals; structural - a summary measure of the relationships among members; global - properties not based on information about members as individuals. e.g. social interaction study calls for structural measures; global measures can be used to classify school systems. (It will be noted that the present study uses analytical units - summary data on individual properties; structural units - e.g. teacher-pupil interaction; and global - school types.)

An example of the use of analytical and global units in an epidemiological strategy is that of Offenbacher (1969) who found in an analysis of 12-16 year olds in New York city and Baltimore, dividing them into four groups by social class and school type, that it is not social class with its assumed culture-conflict which influences students' low achievement, but it is lack of social competence. Thus, Swift's criticism is met by the use of the 'blunt instrument' in competition as a predictor with aspirations, attitudes, perceptions and interpersonal competence. The influence of fathers education on academic achievement via social competence could easily be read into Wilson's (1970) paper in which, out of a total of 53% of academic competence predicted by educational aspiration, aspiration to graduate from college, academic quality of the primary school and fathers education, the latter was the strongest predictor. Wilson concluded that

the 15 I.Q. points disparity between whites and blacks was entirely interpreted by intervening environment variables. It would seem, then, that in a multiple regression the gross socio-economic predictor will prevail unless those personal competency factors which are mediated by environment are themselves measured and placed in the matrix, in which case they will extract what environment includes. The social analysis type of hypothesis generating approach is well demonstrated in Bachman's (1970) conclusion that three background dimensions proved especially important - family socio-economic level, family relations, and the composite measure of race-school integration-region. Bachman notes that intelligence was treated in two different analytic roles in their study - as a criterion variable, presumed to be caused in part by family background; then in later analyses as a causal variable. Bachman also utilized intelligence as an intervening variable, channelling some of the effects of family background. Bachman concluded with evident satisfaction that a great degree of parsimony had been achieved in identifying only three or four variables which could be regarded as summarizing most of the (measurable) impact of family background.

Psychological and Educational Predictors. Mitchell (1969) has vigorously criticized psychological schema such as Maslow's as failing to "define, explain and predict the seemingly intractable reality that confronts us in everyday life". (p697) What Mitchell is really saying is, of course, that if certain realities are selected as the important ones, then the preferred psychology is that which helps to predict and explain that reality. For the purposes of this study, Mitchell's argument is valid, but his selection of important realities is not felt obligatory. In fact, he has merely affirmed the underlying assumption of all research involving the use of non-intellective predictors, that "aptitude tests will tell us what an individual could do, achievement measures tell us what he does, his personality characteristics help explain what he will do, and vocational interests indicate what he wants to do." (Kearney, 1966)

A number of recent studies have indicated the relative status of intellectual and non-intellectual psychological variables as predictors. Standbridge (1968) found California Test of Mental Maturity scores a stronger predictor ($R^2 = .178$) than all California Personality Inventory scales together ($R^2 = .133$) with the Iowa Tests of Educational Development score as criterion. Kohli (1968) found correlations of .35 to .45 of Differential Aptitude scores with high school grades, and recommended that further research be initiated to identify those factors which are apparently additional influences, beyond aptitudes, on achievement. Roscoe and Henderson

(1966) found that in the selection of disadvantaged high school students for further educational opportunity, teacher's recommendation was a better predictor than measures of intellectual functioning, personality and social adjustment, personal goals, and motivation. The absence of conclusive findings in attempts to predict attainment is well indicated by Miller's (1970) view that of the many possible predictors of success in higher education in Australia and New Zealand, the best was high school results, but these would not allow a stringent selection policy. His conclusion is that at the higher education level, motivation and other non-intellective characteristics "are probably more related to the success of high-ability groups than mere academic ability as measured by school examination results." (p18)

Chapter 3

RESEARCH DESIGN, THEORETICAL FRAMEWORK AND PROCEDURES

Determination of the theoretical framework and research design is best obtained by the same means as was the understanding of the dimensions of the problem in the previous chapter, namely by close attention to the literature.

The Need for Multivariate Research in Person-Environment Settings

Cronbach (1960,p17) summed up the empirical quest neatly: "All decisions involve prediction." Mitchell (1969) pointed out the implication of the Sullivan, Lewin, Fromm, Murray, Kluckhohn, Getzels, and Thelen contributions to the understanding of people-environment interaction and warned of the serious limitations of research which fails to take account of environmental-contextual interactions with the individual's characteristics.

The argument for multivariate research is powerfully expressed by Tatsuo (1969,p740):

"Over and above these impetuses (publications involving multivariate findings, and the availability of electronic computers), however, there is the fact that educational research is inherently multivariate in nature. Educational outcomes are seldom measured against a single criterion. The alternatives open to the educational researcher are, thus, either to conduct a series of univariate analyses (one for each criterion variable) or to carry out a multivariate analysis incorporating all the criterion variables simultaneously. Seen in this light, the increased use of multivariate analysis in educational research, phenomenal though it is, still falls far short of its ideal rate, namely 99+ percent. The basis for this seemingly bombastic assertion is that the first alternative mentioned above is not really a valid one . . . the statistical dependence among the several criterion variables upsets the significance levels in the series of univariate tests."

In the search for relevant environment-person variables, the researcher faces the demand for an "ecological psychology" strategy (Shulman, 1970, p376), which will move toward identifying the dominant environmental variables, describing them adequately and assessing their relative influence. In so doing, broad distinctions like advantaged-disadvantaged and child vs. subject-centred schools become unimportant and the focus is drawn to complex dimensions and environmental forces. (Gooch and Pringle, 1965)

The researcher is still required to choose criteria. Lavin (1965) has well questioned the use of academic grade as criterion for education, asking whether there are other socially significant values and goals which are hidden behind the traditional emphasis on grades. As Werner (1970) has shown for Finnmark schools, there are very important differences in social opportunity to get developing activities for adolescents whose parents have

higher status. Research does little to elucidate these in terms of non-academic criteria.

The question 'Which contexts and categories matter?' also must be answered. Entwistle and Welsh (1969) showed in a large Scottish study that secondary school attainment is more difficult to predict in the high than in the low ability group and that motivation is a more potent factor in the high ability group. Likewise Schafer and Olexa (1969) found that high school stream is independent of sex, SES, I.Q. and previous g.p.a. as an influence on achievement. Gilchrist and Hammond (1971) seem to have confirmed that in the long run the success and individual development of high ability Australian boys depends on family background variables and the ability to defer gratification.

All of these considerations and more are well summed up in Mitchell's (1969) list of five criteria for a research method in psychology which would contribute more efficiently to the solution of "our critical educational and social problems":

1. Conceptualization of research problems, as often as feasible, within the framework of person-environment interactional systems.
2. Conceptualization of research problems in multivariate terms that accurately reflect the complexity of both personological and environmental domains.
3. Provision of appropriate techniques for measuring critical environmental and situational variables that are at least as reliable, valid and precise as those techniques we now employ for measuring personological variables.
4. Provision of methods for defining and assessing person-environment relationships that are theoretically, logically and operationally defensible.
5. Application of multivariate statistical methods, appropriate for analyzing the data derived from such a research setting.

Limited examples of the type of multivariate educational research advocated by Mitchell have become much more plentiful (Pierce, 1968; Lenning, 1970; Cullen, 1970; Feldhusen, 1971; Shea and Wilkens, 1971; Williams, 1971; Wisconsin State Dept. of Public Welfare, 1965; Binder, et al., 1970; Butcher and Pond, 1969; Finlayson, 1970; Cowell and Entwistle, 1971; McCloud, 1968; Satir and Cardon, 1968; Even, 1968; Baird, 1969; Feldhusen et al., 1970; French, 1969; Clarke, 1968; Levanian, 1969; Rock, 1968; Lunneborg, 1970; Nisbet and Entwistle, 1969; Niskanen, 1968; Khan, 1969). Most of these projects have been limited in scope of either educational environments, or educational criteria, or both; or have been devoted to

a preliminary task such as the test of the additional efficiency of a specially constructed personality test in predicting achievement. A few very large studies such as those cited several times in this study, by Bachman, Mayeske, Lohnes, Keeves, Butcher, Pidgeon, Sumner and Warburton, have attempted the level of conceptualization, measurement and multivariate analyses advocated by Mitchell and obviously supported by Shulman, Harp and Richer, and Tatsuoka.

Cooley and Lohnes (1971, pp5ff) have drawn on various specialists in multivariate methods to explain the heuristic function of multivariate methods. That role is in the discovery and refinement of constructs which may prove theoretically fruitful. This is compared with the usual role of statistics at the end of the research process in the testing of hypotheses deduced from theory against empirical results. Cooley and Lohnes themselves depended heavily in Project Talent on linear functions fitted to complexes of variables to specify the details of theoretical construct and of relationships among constructs, a heuristic use of the procedures which they claimed to be far more important than the hypothesis testing uses. They stress also that multivariate procedures have transformed survey research, so that Cattell calls it the "new psychology" and claims that it is more potent than experimentation. Cattell is further cited as basing the potency of the new approach on the fact that it "took life's own manipulations, in clinical, social, and physiological data, and by more intricate, non-interfering, statistical finesse teased out the causal connections among data which could not be manipulated." (cited, p6).

Guidelines to a Research Strategy

Particular features of the methodology of other multivariate studies relevant to the present study may be briefly noted. Mayeske (1969) employed factor analysis to reduce a large number of variables into a fewer number of indices prior to the utilization of these indices in regression analyses. Thurston et al. (1970) reporting the problem of predicting delinquency, advocated the use of multiple regression including stepwise analysis, multiple discriminant analysis, principal components analysis and canonical factor analysis. Lohnes (1966) cites with approval, Anastasi:

"Factor analysis is not a device for discovering basic, immutable units of behaviour but a technique for introducing order into a mass of otherwise unmanageable facts."

Cartwright (1969) suggests a use of factor analysis prior to

to multiple regression analysis in a research design:

"-exploratory factor analysis . . . strategically precedes multiple regression analysis; for one useful question that might be asked of factor analysis is: what variables (and what measures) are worth putting into a regression analysis?" (p176).

Gibbons and Lohnes (1969) carried out what they termed "a priori" factoring of the "enormous predictor battery of 98 traits" in order to obtain a reasonably concise set of rubrics in terms of which to conceptualise adolescent personality. (p18). Stewin and Bicknell (1970) tested the relative usefulness of either factor scores or raw scores of several non-intellective predictors of achievement and found the raw scores better predictors. Lohnes (1966) found that separate factor solutions for males and females in his analyses of adolescent personality were so similar that he was encouraged to look for a single common solution. Harp and Richer (1969) observed that it should be recognized that where total populations are involved, tests of significance are largely irrelevant. (p684).

From these reports it is possible to deduce an initial strategy for the exploration, parsimonious selection and multivariate prediction of dominant factors in adolescent personality. It will be clear at this point that the exploratory multivariate method could be applied to a sufficient range of variables on adolescents to provide a theory of personality of a trait-and-factor nature within a predictive and explanatory person-environment context. This is what will be described in the following pages. The basic demands on such an attempt cannot be better explained than in the standards cited by Lohnes (1966) from Kelley in 1940:-

"There are certain fundamental principles which should influence our selection (of derived variables):

The original variables should be wisely chosen and weighted so as to encompass the life situation which it is desired to explain psychologically. The factors comprising the final set should be uncorrelated.

These factors should be ordered for magnitude: this ordering, if the original variables have been wisely chosen and weighted, is also the ordering of importance.

The factors comprising the final set should be as stable as possible with changes of age thus avoiding new factors and new interpretive devices as growth takes place. As a final practical guide the final factors should be determined with high precision and with low time, administration and scoring costs." (cited, 1966, 1-26)

To this historically precocious wisdom of Kelley, Lohnes adds that of Flanagan, Kelley's student, and originator of Project Talent, whose criteria for a trait-and-factor theory of personality were that it:

1. Define its elements without ambiguity and in terms of behaviour.
2. Be founded on extensive and accurate observations.
3. Consist of basic elements which are independent.
4. Provide a simple explanation of the maximum number of well-established facts.
5. Have the maximum predictive value.

In the same context, Lohnes refers with approval to Flanagan's 1952 statement to the Psychometric Society that psychology needs to devote a great deal of attention to studying human beings in their natural environments. Taken with the above criteria and Lohnes' own major correlation principle, "the systematic collection of a large representative sample of events or behaviour of the type being studied"(1966;1-27), this statement summarizes the approach of the present study.

Assumptions of this Study*

A general assumption underlying the study was that there would be similar traits-and-factors in the personological outcomes and similar environmental factors for New Zealand adolescents as for those in major overseas studies. It was further assumed that many significant relationships would be found to exist between the environmental and personological factors. Furthermore it was expected that when personological factors were distinguished as intellectual and non-intellectual, relationships and common dimensions would be found between the two classes of person factors.

Specific assumptions are far too many to report, but some of the strategic ones are listed hereunder in the several categories.

1. The Group and the Individual

Assumption 1.1. The subjects of the inquiry are both groups and individuals, depending on the research question.

In the over-all study, only some of which is to be reported in this document, collectivities were assessed in terms of summary characteristics of individuals in them. These groups are either structural or nominal and include those defined by socio-economic levels, family relations, school seniority, sex, race, ability levels, school memberships, school types, classroom and selected social behaviours.

Individuals were the main source of information, this including principals, teachers and pupils. The inquiry into

* I am indebted to Keeves (1972) for material suggesting this approach to the research report.

the characteristics of groups was contributory to the study of individuals and in some specific instances (e.g. classroom characteristics and family relations) environment data were employed as individual variables.

The conceptualized association of the group and individual characteristics was the logical consequence of adoption of a person-environment interaction theory, in which the individual is seen as a dynamic system of needs and energies, while the environment gratifies, frustrates, modifies and channels the needs and their expression. This leads to the second assumption.

2. The Individual and the Environment

Assumption 2.1. The individual is at any moment of perception, response or action both object of impact and subject of action in an individual-environment interaction.

While some variation in individual behaviour is accounted for by variation in the unique individual environment, some is the outcome of unique individual personality traits. As a result both environment and individual are continually modified and the nature of their interaction is undergoing change.

Assumption 2.2. All behaviours of the individual are outcomes of the interplay of characteristics of the environment and the internal traits of the individual.

While the respective contributions of these two main sources of effects may be analysed, the various outcomes are always interaction effects, in which varying contributions of environmental characteristics and internal traits are present. The maximization of explanation of a behaviour will depend on the choice and measurement of individual traits as personality predictors on the one hand and the relevance of the environmental characteristics selected as predictors on the other.

3. The Educational Environment

The term environment encompasses all those conditions of existence capable of stimulating or interacting with the individual. Its ramifications are endless. In the final analysis, no part of the cosmos is without its impact, however infinitesimal, on the individual. The individual is a child of the universe. Obviously certain elements stand out as much more influential than others. An example would be sheer density of animal population (including human) in a given part of the biosphere. The analogy of individual food needs to individual personality demands is, of course, a close one. In any general understanding of environment the question is, 'To what extent does this environ-

ment limit/enhance the individual's ability to function?

The next question is, 'what function are you considering?' Clearly it is not possible to study all functions and to adduce all relevant environmental interactions with individual traits which may account for those functions. It is necessary to reduce the functions and the relevant explanatory categories to manageable proportions. In the present inquiry, it was decided to limit the area of function under study to intellectual attainment and personality attributes of adolescents in secondary schools. Referring to both these outcomes as "educational" is to go beyond the traditional formal academic criterion of education, but it is clearly within the more general concept that education is concerned with the development of the whole child. The major generic dimensions of the individual are the intellectual and non-intellectual. Educational environments are those environments which exert a significant influence on the formation of the individual as a unique constellation of intellectual and non-intellectual functions. The relevant environments, are taken by various researchers as home, school, peer group, church and (later) job. Those which are at the same time most embracing in their inclusion of decisive influences and most general in their inclusion of virtually all children, are the home and the school. Influences of the wider culture and subcultures are mediated more through the home and the school than by any other structural or environmental entity. This is not to deny that for given individuals other environments such as peer, church or recreation might be decisive. Nevertheless, in the present study, major attention is given to the interplay of home background, pupil characteristics and school variables. The latter, in the sense of the contribution of classroom climate characteristics and teacher characteristics, will not be reported in this document, but features of the school are included primarily as grouping devices and as pupil perceptions.

Assumption 3.1. The family in which the individual lives is the repository and medium of a complex social-cultural environment.

Such characteristics as social class or race represent a matrix of important influences such as values, attitudes, speech patterns, habits, tastes, beliefs, knowledge, abilities, experience, opportunities, expectations, etc. Insofar as a measure

of social class alone appears to be related to an individual outcome, it must be interpreted as undifferentiated social-cultural influence. It is through the family that the individual inculcates most of this influence.

Assumption 3.2. The family in which the individual lives is a potent source of interaction between persons with resultant affects on the individual.

The family provides such things as support, control, basic necessities, information, opportunity and stimulation including all the intuitions, beliefs, values and attitudes which are enmeshed in verbal and non-verbal communication. It is as a result of the interplay of these interpersonal forces with individual traits that intellectual and non-intellectual effects arise in the individual. Social and behavioural manifestations of individual personality are to some degree, outcomes of the variability of families in enhancing the needs and ability traits of individuals.

Assumption 3.3. The school also is an interpersonal stimulus situation for the individual.

But the school as an educational environment is different from the family for two primary reasons: first, its influence is temporally subsequent to and emotionally secondary to that of the family; second, it constitutes a demand and opportunity situation for the individual in which his dependency relationships with the family are a contingent factor.

The fact that the individual is already primarily socialized by the family means that the school interacts not only with the individual but also with his whole perceptual gestalt of his family environment. Complete patterns of attitude, belief, emotional reactivity, expectation, etc. come into play in response to the communications of the school to the individual; and the effect in the individual depends upon complex internal demands for congruence and self-enhancement.

Because the individual is already in an affective state of relative dependency, i.e. of deficit or of strength, the demand and opportunity system of the school interacts with this dependency state in either constructive or deteriorative ways.

Assumption 3.4. Since the primary demands of the school are for intellectual performance and social compliance, the constructiveness of the interaction effect of school and individual depends primarily upon two classes of individual traits: intellectual aptitudes and authority relations.

Assumption 3.5. Both families and schools are relatively constant in their interpersonal impact.

This assumption provides the basis for belief that those relationships observed between families and schools on the one hand and their individual members on the other, may be regarded as reasonably constant over time.

Assumption 3.6. Characteristics of the home and school can be identified and measured.

Assumption 3.7. Though there is a vast number of specific characteristics of both families and schools, the dominant features can be identified by systematic means.

Assumption 3.8. The investigation of environmental effects on individuals is probabilistic rather than deterministic.

Individuals are capable of a range of responses to a given stimulus. The form of the stimulus as presented in a data-gathering instrument is open to individual differences in perceived meaning. Measurement of responses may contain error. Events and stimuli in the environment as perceived by the individual are not entirely constant and as a result individuals' responses to and perceptions of these same environmental factors will be variable within and between individuals. These sources of variability are extremely difficult to control; it is assumed, nevertheless, on the basis of constancies and replicated findings in the literature on environmental effects, that educational environments bear persistent characteristics which affect individuals and which can be observed, measured, and expressed in statistical and verbally definitive terms.

4. Status and Prospect in Individual Intellectual and Non-Intellectual Development.

While the preoccupation of schools tends to be with the amount of learning of basic skills over measured time-periods, thus tending to focus attention on teaching-efficacy in school-time, the larger concern of society is with long term processes and over-all product. In the long run, however, the question is not so much: 'How much was learned/taught, in artificially segmented time periods in an artificially isolated environment?' but: 'What has the individual become as a result of the years of educational/socializing experience?' The first question, though it purports to study individuals, is really to do with the efficiency of the education system. The second question,

though pursued in institutional settings, is concerned with human products. The values-position of the first is that learning and learning-processes are the important thing. The values-position of the second is that the person in the total education/socialization process is the most important thing, and thus there will be more interest in the totality of the personality than in the quantity of intellectual attainment.

Assumption 4.1. The best index of the outcomes of education is one based on a multivariate analysis.

As has been discussed in the section on multivariate studies, the preferred approach to the definition and ordering of the many variables of personality and of education is that which takes a comprehensive range of variables relevant to the field in question and, using a sample in which "life's own" sources of variance are present, allows that structure which is in nature to be found without manipulation or control. This makes the discovery process prior to the explanatory process, it allows hypotheses to be developed from existential events rather than contrived ones and it maximizes the emergence of serendipitous findings. If it so happens that the findings have come from a complete population, rather than a sample, then the findings are not subject to chance variation in random sampling. While history may change that population, the status of the population is accurately described, within the limit of measurement and methodology.

Under these conditions, the results of factor analysis for example are an orderly answer to the question, 'What are the underlying dimensions, or the fewest number of variables, that account for the variation of this population on the domain of single measurements collected?' It is these factors which form the best index of the outcomes of education.

Assumption 4.2. The best indexes of future characteristics of an individual are his present characteristics

While the stability of given characteristics varies, for example, occupational preference is apparently much less stable in adolescents than is verbal ability, and self concept much less than sociability, yet it remains true that the individual is on the whole more likely in the future to resemble what he has been than to undergo marked change.

It has been noted (Assumption 2.1.) that dynamic change is to be assumed as a function of the interaction between the individual energy-system and the environment. This has been des-

cribed by Murray (1938) and by Stern (1970) as a needs-press dynamic which is necessary to explain individual personality development.

Nevertheless, it is to be assumed, despite the undeniable fact of individual change, that personality is continuous with its own past. Some unknown part of this stability is due to genetically based traits. Part of the reason for it is the relative constancy of the unique environment of the individual. Internal consistency, both cognitive and affective, is also to be expected for purely psychological reasons. One reason is the nature of cognitive development as continuous assimilation and accommodation producing on-going modification of the cognitive structure; the other is the fact that adolescents are in the process of trying to establish a personal identity which will endure in their individual environments. It is to be expected that much of their current resolution of issues and styles will endure. A final reason for continuity is that individuals look for environments which reinforce their identities; and they tend also to change existing environments to make them compatible with their own needs and modes of functioning.

For these reasons it seems justifiable to claim some predictive usefulness of current status of traits for future development. Thus those major traits identified in the present study are taken as relatively enduring outcomes of the education/socialization process, and their environmental predictors are of correspondingly long-term significance.

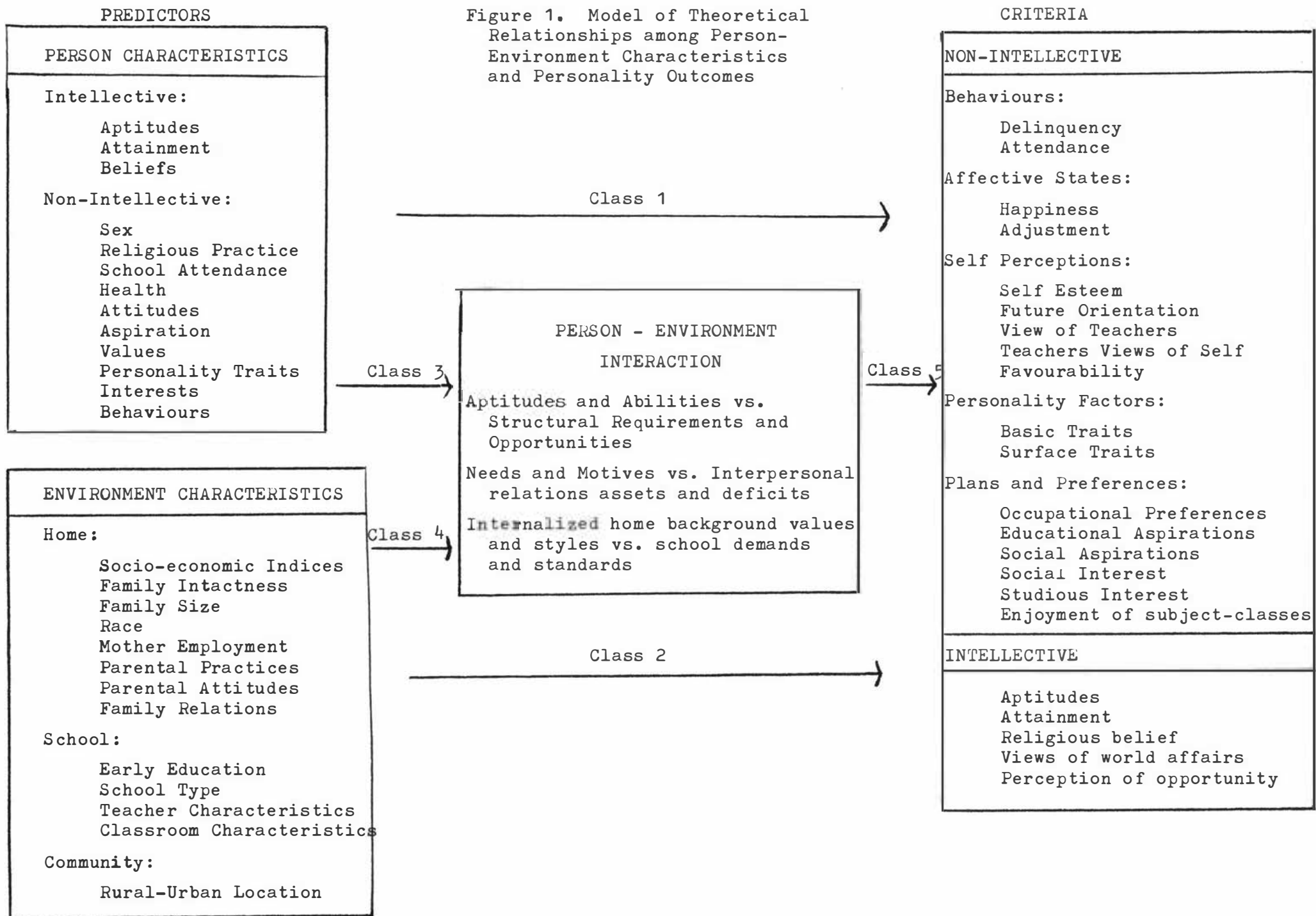
It is not to be assumed that important change cannot take place. To explain why it normally does not is by no means to say that the individual is unable to change, say, to a happier mode of existence or to a higher academic motivation given different environmental conditions. Indeed it is implied in the fact that certain conditions reliably predict certain desirable outcomes that given those same conditions all individuals in the population under study would tend toward those outcomes. It is equally implied that if well-informed intervention in these conditions does not take place, the tendencies described in the analyses will prevail. A prediction model describes what is: it also provides a basis for choosing what might be.

An Exploratory Design for the Study of Adolescent Personality

Research Questions:

The task which faced the researcher is best indicated by listing the questions which the investigation set about to answer.

1. What are the major dimensions of the home background structural variables and the life variables of the adolescent in secondary school?
2. What are the major dimensions of parental attitudes and family relations?
3. What are the major dimensions of teacher characteristics relevant to teacher effect on pupils?
4. What are the classroom and school-type tendencies in needs-press characteristics of the classroom?
5. What are the major dimensions of adolescent intellectual traits?
6. What are the major dimensions of adolescent non-intellectual traits?
7. What are the major dimensions of adolescent personality as obtained from both intellectual and non-intellectual traits?
8. Do the factors of person-characteristics vary by sex or seniority?
9. How much of the variance on each dominant intellectual trait is attributable to variation in home background characteristics?
10. How much of the variance on each dominant intellectual trait is attributable to variation in personality characteristics?
11. How much of the variance on a selected academic attainment is attributable to variation in classroom teacher characteristics?
12. How much of the variance on a selected academic attainment is attributable to variance in classroom characteristics?
13. How much of the variance on a selected academic attainment is attributable to the combined effects of home background, classroom characteristics, teacher characteristics and pupil characteristics?
14. How much of the variance on each dominant non-intellectual trait is attributable to variation in home background?
15. How much of the variance on each dominant non-intellectual trait is attributable to variance in intellectual traits?
16. How much of the variance in academic attainment is attributable to the separate and combined influence of home background, intellectual traits and non-intellectual traits?
17. How much of the variance in selected dominant non-intellectual traits is attributable to the separate and combined influence of



home background, intellectual traits and other non-intellectual traits?

The relevant variables for answering these questions can in view of the research reviewed, be found within three main categories; Person Characteristics - those variables of individuals which represent the main assumed outcomes of socialization -

Environment Characteristics - those dimensions of the environment assumed to have major effects on the individual in his personality development - and

Criteria - those individual characteristics selected as potentially significant components of outcome factors.

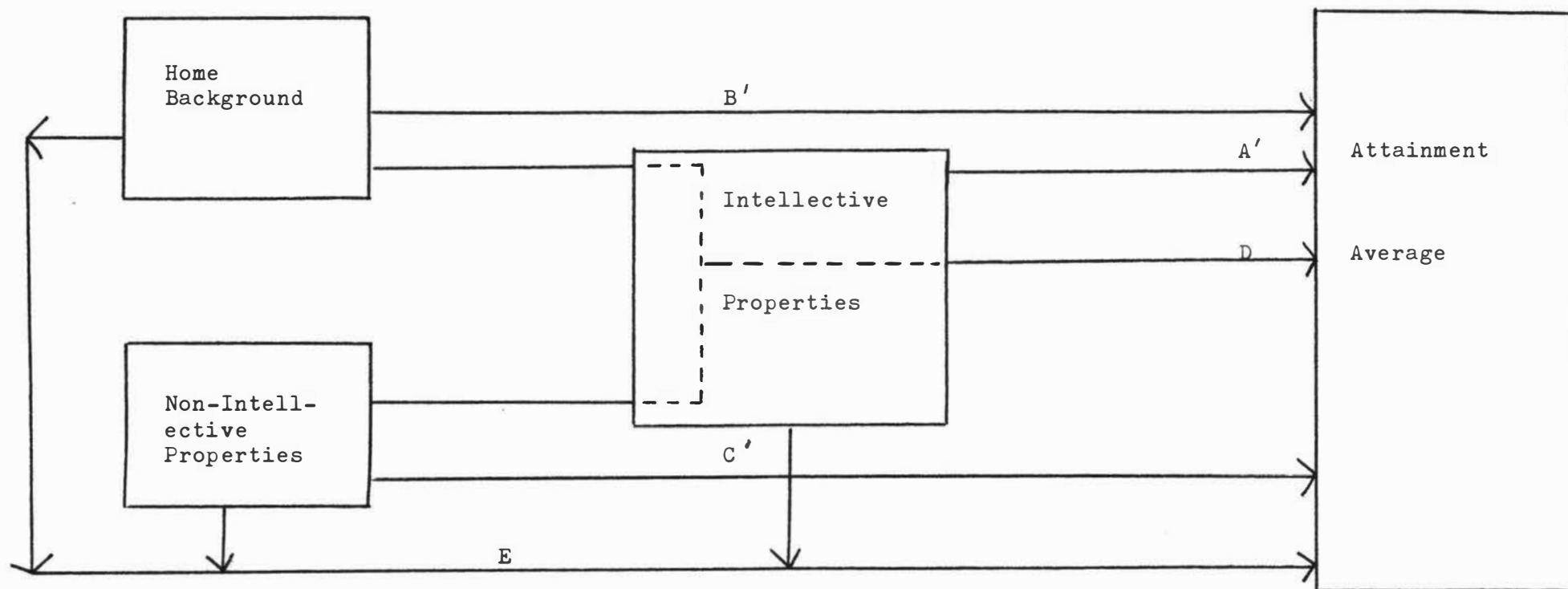
Figure 1 is a model of the theoretical relationship of the three categories of person-environment variables. It is adapted from the model given in Bachman, et al., (1968).

The model depicts the person-characteristics and environment characteristics which require description in operational terms, and the outcome criteria in terms of personality characteristics which are to be predicted. The arrows from left to right represent the exploratory process of discovering relationships between the predictor and outcome sets. The intervening box, entitled Person-Environment Interaction represents the internal process in individuals which is inferred from the fact that the sum of the prediction contributed from the person and environment categories taken separately does not equate with the sum of the contribution obtained from the two sets of predictors taken together. From this it is inferred that interactions of the individual dynamics and the setting, especially the person context, are such as to influence outcomes in a manner which is not attributable to the variation in either one of the interacting variables. As a result of such findings emerging from application of the model, the nature of the interactions may be hypothesized.

It is also possible, as the model implies, to investigate several classes of relationships between predictors and criteria. A class 1 relationship represents the effects of person-characteristics on a criterion independent of the effects of environment. A class 2 relationship represents the effects of environment characteristics independent of the effects of person characteristics. Class 3 relationships, proceeding from the intervening class 2 and 3 relationships represent joint or overlapping effects of person and environment characteristics.

The model can be shown to work and to be capable of expansion

Figure 2. Model Summarizing Effects of Home Background, Intellective Properties and Non-Intellective Properties on Attainment Average



$B + C + D$	= Total effects of home background and non-intellective properties
$A + D$	= Total effects of intellective properties
$A' = E - (B + C)$	= Effects of intellective properties independent of home background and non-intellective properties
$B' = E - (A + C)$	= Effects of home background independent of intellective and non-intellective properties
$C' = E - (A + B)$	= Effects of non-intellective properties independent of home background and intellective properties
$D = E - (A + B + C)$	= Joint effects of home background and intellective and non-intellective properties
E	= Total Effects

if it is asked, for example, to represent the various effects of intellectual, non-intellectual and environmental variables on academic attainment. In this case an additional predictor category has to be isolated. Figure 2 shows the model of effects of home background intellectual properties, and non-intellectual properties on attainment.

A numerical example will show how the formulae work.

$$\begin{aligned}
 \text{Given that} \quad & E = .72 \\
 & A + B = .66 \\
 & A + C = .68 \\
 & B + C = .40 \\
 \text{then } A' &= E - (B + C) = 72 - 40 = .30 \\
 B' &= E - (A + C) = 72 - 68 = .04 \\
 C' &= E - (A + B) = 72 - 66 = .06 \\
 D &= E - (A + B + C) = 72 - 40 = .32
 \end{aligned}$$

In this example, the intellectual properties would be seen to have the greatest independent effect on attainment, but the joint effects of home background and non-intellectual properties working through intelligence were at least as much again as those of intellectual attributes alone. Similarly, while the independent effect of home background and non-intellectual variables is very small, their effect mediated through intellectual functioning is, in this example very considerable. The total effects of home background and non-intellectual properties would be .42, and those of intelligence .62.

Propositions for Exploration

From the assumptions given above and from the literature reviewed a number of tentative propositions arise. Since it is not proposed to report all analyses in the present document, but rather those which represent the initial stage of exploration, only those initial propositions are listed below.

Proposition 1. Individuals in different structural settings are different in important attitudes, perceptions and behaviours.

Proposition 2. Structural variables of the home background fall into meaningful major dimensions.

Proposition 3. Parental attitudes and child-rearing practices fall into meaningful major dimensions.

Proposition 4. Intellectual properties of adolescents in school fall into meaningful major dimensions.

Proposition 5. Non-intellectual properties of adolescents in school

fall into meaningful major dimensions.

Proposition 6. Home background structural variables have some important relationships with intellectual attainment of adolescents in school, but not as strong as those of personal relations or those of an intellectual nature.

Proposition 7. Intellectual characteristics of adolescents in school have some relationship with non-intellectual characteristics but far less than that of structural variables of home background, which again have less effect than the personal relationship variables.

It is consistent with the arguments adduced for the development of concept and hypotheses from multivariate analyses, that these propositions have been stated in general terms. Empirical tests are incorporated in the analyses, but only in the sense of criteria for inclusion of variables in linear functions. The nature of the investigation is such that it is assumed in the truly naive sense, that that which is found is important, simply because it describes the population in more complete terms than has been heretofore possible and demonstrates quantified relationships of variables in such a way as to point to hypotheses concerning experimental intervention procedures.

Procedures of the Study

The purpose of the inquiry was to assess among school adolescents the characteristics of the educational environment and of individual outcomes and to explore the relationships of environment and person properties to dominant outcome variables. In brief, this meant attempting to assess the major dimensions of adolescent personality and to identify and assess the factors influencing them. In order to do this it was necessary to select those aspects of environment and persons most likely to contribute to the definition of environment and person dimensions and the prediction of personal outcomes. It was necessary, furthermore, to study a population most likely to contain a wide natural variance on the independent and dependent variables. The many problems presented by these demands were resolved in the following manner:

1. It was decided to collect as much information as possible within the respective domains and to depend upon empirical data analyses to resolve the dimensions within those domains.
2. In order to get representation of a full range of environments, it was decided to attempt to study a population which included the full range of abilities and home backgrounds and as many school

types as possible, and to locate these in a single geographic area so as to be able to exhaust the complete population variance.

3. Information was obtained primarily from the pupils, since it was their perceptions, traits and performance which were the outcomes under study. It was not assumed that independence and objectivity of measures were always necessary, for the assessment of the relationship between, say, a pupil's attitude toward teachers and his performance was felt to depend on getting a measure which reflected the pupil's own subjective experience of teachers. Thus it was not necessary to argue that the measure was free of the subject's knowledge of what was being measured. Rather, it was assumed that the real interaction of forces which was assumed to take place in the unique individual personality was more fully depicted by drawing on internal events as well as the external. But it remains true that certain factual information about father's occupation, parental education, family size and such like, being obtained from the students, was subject to error. While this was felt to be a minor risk, the advantages of obtaining indexes of parental child-rearing practices through pupils' perceptions were quite considerable. Likewise the student's self-report on his view of how the school regarded him was considered a phenomenological factor which had no equivalent in "objective" ratings. In short, while it was seen necessary to frame questions in such a way as to enhance the validity of student-supplied information, and while certain information was obtained from school records, it was not felt that a comprehensive picture of the student and his environment was contaminated by use of the student's own perceptions. Indeed, the cross-validating criterion effect of a mixture of objective and subjective data was potentially of great psychological interest.

Operational definitions of variables

The following list includes the complete set of variables for which data were collected. An asterisk indicates a variable or set of variables the analyses on which have not been incorporated in the present report but which will be reported subsequently.

1. Structural Variables of the Home Background

	<u>Variable Name</u>	<u>Operational Details</u>
UR	Urban residence	Mainly town or city residence up to 10 years of age

FED	Father's education	Position on 1-6 scale from no secondary school to university degree.
MED	Mother's education	As for father's education.
SES	Socio-economic status	Position of father's occupation on 1-6 SES scale, from professional to unskilled manual, as shown by NZCER (1972) socio-economic status scale.
MEM	Mother employment	Mother has paid job outside of the house.
FPA	Father deceased	Father is not alive.
FPH	Father alive but absent	Father lives elsewhere.
RM	Race Maori	Thinks of self as Maori.
FMS	Family size	Number of siblings plus self.
SPE	Sibling position - eldest	Eldest child.
SPO	Sibling position - only	Only child.
RLF	Religious affiliation - family	Family claims to belong to a church.
RLPF	Religious practice - family	One or both parents attends church more than once a month
RLPP	Religious practice - pupil	Subject attends church or a church group more than once a month.

2. Life Variables of the Pupil

	<u>Variable Name</u>	<u>Operational Details</u>
Sx	Sex	Male or Female.
CA	Age	Age to nearest year.
CL	Class level	Form 3 to Form 7 school class enrolment.
PSE	Pre-school education	Attended Kindergarten or Play Centre for more than one term.
CPS	City primary school	Attended mainly city or town primary schools.
NSSA	Non-state school attendance	Attended a private, independent or church-related primary school
ISA	Intermediate school attendance	Attended an intermediate school.

HR	Health record	Recorded by school as in good or poor health.
PSR	Primary school reading	Education Department 1-5, good to poor, reading.
PSA	Primary school arithmetic	As for reading.

3. Personal Relations Variables of the Home Background

	<u>Variable Name</u>	<u>Operational Details</u>
PA 1	Parental attitude - mobility	3-point scale (Hargreaves, 1967)
PA 2	" " - attainment	" " "
PA 3	" " - non-smoking	" " "
PA 4	" " - chores	" " "
PA 5	" " - companionship	" " "
FW	Family warmth	5-point scale (Webster, 1972)
RPF	Respect to father	" " "
RPM	Respect to mother	" " "
FRP	Respect from father	" " "
FRM	Respect from mother	" " "
PFC	Positive family climate	Weighted sum of family warmth and respect scales.
PPM 1	Mother support scale	Score on parental practices questionnaire (See ch. 5 for special discussion of development of the five scales).
PPM 2	Mother angry rejection scale	
PPM 3	Mother permissiveness-non-intrusiveness scale	
PPM 4	Mother anxiety-sensitivity scale	
PPM 5	Mother demand scale	
PPF 1-5	Father scales as for mother	

4. Personality Characteristics of Students

(i) Intellectual:

IQ	Intelligence score	Otis Intermediate Intelligence Test score.
DAA	Abstract reasoning aptitude	Abstract Reasoning scores on the Academic Promise Tests (APT) for Juniors and on the Differential Aptitude Tests (DAT) for Seniors.
DAN	Numerical aptitude	Numerical test scores on APT and DAT

DAV	Verbal reasoning aptitude	Verbal test scores on APT and DAT
DAL	Language usage aptitude	Language Usage test on APT; Language Usage - Grammar test on DAT.
EA	Secondary school English attainment	Final class grade on 1-5 scale for 1971.
SSA	Secondary school Social Studies attainment	As for EA
SA	Secondary school Science attainment	"
MA	Secondary school Mathematics attainment	"
AA	Secondary school attainment average	Average of 4 subject attainments, to two decimal places.
SCE	School Certificate English	Sixth and Seventh Form S.C. mark.
SCA	School Certificate Average	Average of four best S.C. marks.
PVR	Secondary school Perseverance Rating	Rating from 1-5, good to poor perseverance as on E.19/22 record card.
FWO,A-R.	Future World Orientation scale scores; Seniors only	Scores on 30 scales of the Future World Orientation, Questionnaire. (See ch. 6 for special discussion of development of the 30 scales).
PO	Perception of opportunity	Vellekoop's (1968) adaptation of Srole scale.
RB	Religious Belief	Score on a short form of the Webster-Stewart Theological Conservatism Scale (Wilson Ed., 1973, in press).

(ii) Non-Intellective

(Behaviours)

DD	Delinquency Detected	Officially recorded delinquency defined as court adjudication.
ATO	Attendance at school	Percentage of full-year half-days of school attended.

(Affective States)

HS	Happiness	Score on the Hoppock Happiness Scale (Smith, 1961).
FR	Family relationship problems	FR scale on Minnesota Counseling Inventory (MCI).
SR	Social relationship problems	MCI SR score.
ES	Emotional stability problems	MCI ES score.
C	Conformity problems	MCI C score.
R	Adjustment to reality problems	MCI R score.
M	Mood problems	MCI M score.
L	Leadership problems	MCI L score.
SE	Self esteem	Score on Coopersmith Self Esteem Scale.
FSO	Future Self Orientation	Score on short version of the Bray Future Time Orientation scale.
AT	Attitude to teachers	Negative, neutral and positive responses to incomplete sentence stem.

(Self Perceptions)

PTA	Perception of teachers' attitudes to self	Negative, neutral and positive responses to incomplete sentence stem.
IF	Index of favourability	Score on the Davidson and Laing Index of Favourability.

(Personality Factors)

A	Sociable	A-scale on the Cattell High School Personality Questionnaire (HSPQ).
B	Bright	B-scale on HSPQ.
C	Calm	C-scale " "
D	Unrestrained	D-scale " "
E	Aggressive	E-scale " "
F	Enthusiastic	F-scale " "
G	Persistent	G-scale " "
H	Adventurous	H-scale " "
I	Sensitive	I-scale " "
J	Self-critical	J-scale " "
O	Insecure	O-scale " "
Q2	Resourceful	Q2-scale " "
Q3	Controlled	Q3-scale " "
Q4	Tense	Q4-scale " "

AV	Achievement values	Achievement values scale from Vellekoop (1968).
AAC	Attitude - Academic	Academic attitude scale from Hargreaves (1967).
AAP	Attitude - Appearance	Attitude to personal appearance, from Hargreaves (1967).
AGC	Attitude - General Commitment	Attitude of general commitment to school from Hargreaves (1967).
TEAM	Academic motivation	Scores on scales of the Smith (1970) Test of Effective Academic Motivation.

(Plans and Preferences)

ECE	Enjoyment of English Class	1-4 specified rating
ECM	" " Mathematics	" " "
ECST	" " Social Studies class	" " "
ECS	" " Science class	" " "
ASE	Aspiration - Education	Sum of responses to two questions.
ASM	Aspiration - Mobility	1-3 specified rating.
CL	Clerical Preference	CL score of Phillips Occupational Preference Scales (POPS; ACER, 1965).
CMP	Computational Preference	CMP score on POPS
PRC	Practical Preference	PRC " " "
SCI	Science Preference	SCI " " "
MCD	Males: Mechanical Preference Females: Medical Preference	MCD " " "
PRS	Persuasive Preference	PRS " " "
SRV	Social Service Preference	SRV " " "
LIT	Literary Preference	LIT " " "
ART	Artistic Preference	ART " " "
ODR	Outdoor Preference	ODR " " "
SOI	Social Interest	Social Interest Scale from Webster (1972).
STI	Studios Interest	Studios Interest Scale from Webster (1972).

* 5. School and Teacher Characteristics

TC	Teacher Conservatism	Score on C-Scale (Wilson and Patterson, 1970).
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TD	Teacher Dogmatism	Score on D-Scale Form E, (Rokeach, 1960).
TE	Teacher Ethnocentrism	Score on Ethnocentrism Scale (Webster and Stewart, 1973).
TR	Teacher Respect Value	Scores on selected Biddle <u>et al.</u> (1968) Teacher Role and Value scales
TI	Teacher Innovation Value	
TP	Teacher Punishment Value	
TRD	Teacher Role Democratic	
TRA	Teacher Role Authoritative	
TA	Teacher Age	Age in years.
TS	Teacher Status	Ranked positions.
TQ	Teacher Qualifications	Ranked Qualifications.
TX	Teacher Experience	Years in Teaching.
PD	Principal Dogmatism	As for TD
PC	Principal Conservatism	As for TC
PE	Principal Ethnocentrism	As for TE
PR	Principal Respect Value	As for TR
PI	Principal Innovation Value	As for TI
PP	Principal Punishment Value	As for TP
PRD	Principal Role Democratic	As for TRD
PRA	Principal Role Authoritative	As for TRA
* CEI 1-30	Classroom Environment Scales 1-30	Scale scores of classrooms on the Stern Classroom Environment Index, (Walker 1971).

Note on certain variables

Since the four aptitude scores are used as equivalent variables in this study while in fact the junior school scores came from the Academic Promise Test and the senior school score came from the Differential Aptitude Tests, it is necessary to rationalize the assumed equivalencies. The APT Manual (1965 Revision) provides correlations of APT and DAT scale scores for different samples as follows (selecting those which are used in the present study):

DAT	VR	and APT V	:	.82	-	.90
DAT	NA	and APT N	:	.75	-	.79
DAT	AR	and APT A	:	.33	-	.72
DAT	LU II	and APT LU	:	.62	-	.80

While in view of the fact that the DAT and APT were constructed for different age levels it is not essential to the procedure used that

there be high correlations between nominally equivalent tests, it would be assumed that some considerable correlation would exist if the aptitudes under test were validly assessed in each test of both APT and DAT. The correlations give no reason to doubt this assumption. In short, the correlations are consistent with the APT authors' stated intention to construct "an earlier-level form" of those DAT tests concerned with the basic symbol systems of the culture (APT Manual, 1965 Revision, p5). Neither DAT nor APT has been based on factor analyses of abilities, but rather on theoretical and practical divisions of mental abilities. Accordingly it may be assumed that in a factor analysis of intellectual characteristics, the tests will be found to overlap. This is consistent with the intended predictive rather than analytic use of the tests. School performance is never dependent on only one aptitude, but represents the interacting effect of several aptitudes, even though, of course, one aptitude will usually tend to dominate. In fact, the lowest correlation of APT scales with each other (AR x LU) is .37, and the highest (N x V) is .69 (APT, 1965, p63). Similarly, of the four DAT tests under view, the lowest correlation (AR x NA, for boys) is .59, and the highest (VR x LU-II: Grammar) is .77 for girls, .76 for boys, (DAT Manual, 4th Edition, 1966, p7-2). It is nevertheless claimed by the authors of both APT and DAT that the differentiating ability of the separate tests is sufficiently high to warrant their separate use as predictors. The method for this study, will be to find the dominant component of aptitude and to use this as the most promising predictor of aptitude-dependent characteristics.

The attainment scores (EA, SSA, SA, MA) were assigned by the schools, not only in the normal case where the 1-5 scale was routine procedure, but also where records were maintained as percentage marks. The mean of these marks was calculated to two decimal places to serve as a measure of average attainment (AA).

The Future World Orientation Scales were obtained from the factor analysis of a questionnaire used by Shallcrass in an unpublished study in Wellington sixth and seventh forms. It was presumed^{*} that similarly meaningful results to those discussed by Shallcrass at a Teachers Refresher Course would be found, and furthermore that the many items could be reduced to far fewer scales by factor analysis.

The scales of the Minnesota Counseling Inventory (MCI) were used partly for completeness of the picture of non-intellective functioning, and partly to enhance the likelihood of obtaining predictions from the environmental factors to potentially useful standard indexes of

* in personal communication on the use of the questionnaire by this investigator

counselling needs. This method of identification of troubled pupils could be supported by empirical information on contributing factors.

Selection of teacher characteristics was guided by the theme of environmental influences. Those factors in teachers as persons which would conceivably affect the person-environment interaction, as opposed to the details of instructional process, were taken as being within the domain of the study. It is obviously inferred that the teachers teaching behaviours will be related to his personal characteristics. Those variables which had been shown in the literature to affect pupils were teacher attitudes and beliefs concerning institutional management and social heterogeneity - in brief, democracy and tolerance. Although no analysis relating the teacher characteristics to pupil outcomes is reported in this document, it is worthwhile noting, as reported in Webster (1972c) that a factor analysis of the teacher characteristics suggested a two-dimensional model of the socio-affective characteristics and educational values of teachers. These dimensions were bi-polar: the humanistic-custodial and the exclusive-inclusive. Loadings and correlations suggested, inter alia, that male teachers tended to be inclusive-custodial, females exclusive-humanistic (elitist?), older teachers exclusive-custodial, and younger, more highly qualified teachers humanistic-inclusive. Four styles - protective vs. demanding and directive vs. co-active were hypothesized. A later study will report on the relationships between these teacher characteristics and salient variables of classes taught by them.

In addition to teacher characteristics, those of the classroom were assessed by the Classroom Environment Index (CEI). Analyses of variance between schools and between classrooms within schools have been carried out and tested for specific group differences by the Scheffe test. A large number of differences were found and these give good grounds for planning further analyses in which the relationship of the classroom climate variables to salient class outcomes will be assessed.

Likewise, characteristics of principals will be incorporated in further analyses designed to assess the contribution of this segment of the environment to pupil outcomes.

Finally, the Test of Effective Academic Motivation (TEAM) is being included in further regression analyses now being carried out and the contribution of these predictors over and above those reported in the present study will be presented in a further report. {The latter is being carried out in collaboration with Gene M. Smith of Boston College and represents the essential complement to the use of standard

non-intellective predictors as is to be reported in this document.)

The sample

In accordance with the intention to obtain data from as broadly representative a sample of secondary school students as possible, arrangements were made to administer the tests and questionnaires to the total secondary school population of Masterton, the main town of the Wairarapa farming area and a busy trading and service centre, with a population of approximately 18,500.

For the purposes of this study, the Masterton secondary schools population was of greater value than would be that of most other provincial centres, since it embraced two state schools and five independent schools. While not providing all possible major secondary school types, since there is no single-sex state school, nevertheless even this type was not completely absent if it be conceded that a Catholic boys and a Catholic girls colleges incorporate some of the aspects of public single sex schools insofar as they are of similar social class composition to that of the general population.

Numbers in the population studied are given in Table 1.

Table 1: School Enrolments and Numbers of Useable Data Sets in Masterton Secondary Schools Study in 1971

School	1971 Enrolment	Number of Useable Sets of Data	Useable Sets as Percent of Roll
1. Makora College	582	483	83%
2. Wairarapa College	870	725	83%
3. Rathkeale College	334	298	86%
4. St. Josephs College	256	208	81%
5. St. Matthews College	167	140	84%
6. St. Brides College	172	158	92%
7. Solway College	101	98	97%
Total	2482	2102	85%
Independent Schools	1030	893	87%
State Schools	1452	1208	83%

It is obvious that this population includes a disproportionate number of private school pupils. Table 2 shows that whereas 19% of

all N.Z. secondary school enrolments are in private schools, 41% of Masterton secondary school pupils are in private schools. It is to be noted, however, that though only two of the five private schools are Catholic, these account for 41% of private school enrolments, and 17% of the total. This is close to the N.Z. population proportion of 16% Catholics (N.Z. Dept. Stat. 1966). Assuming that social class representation is not greatly different in Catholic than in public secondary schools, this suggests that in terms of social class, it is the remaining three schools which possibly deviate from N.Z. norms. The enrolments in these three in 1971 were 602, or 24% of the total Masterton enrolment.

Table 2: Public and Private Secondary School Enrolments for New Zealand and Masterton

	Enrolment	Percent of Total
Public Secondary Schools	114,856	81%
Private Secondary Schools	27,553	19%
Totals	142,409	100%
Masterton Public	1,452	59%
Masterton Private	1,030	41%
Totals	2,482	100%

Sex representation is close to the N.Z. 1969 school enrolment figures. Reference to Table 3 will show that while 52% of the N.Z. secondary schools population is male, the 1,140 males in the Masterton data make up 54% of the total of 2,102. For N.Z. the population proportion of males in 1971 was 49.99% (Abstr. Stat. June, 1972).

Table 3: Sex Representation in Total Secondary School Enrolments and in Masterton Secondary Schools Study Data

	Boys	Girls	Total Data Sets
N.Z. Enrolments	74,725 (52%)	67,684 (48%)	142,409
Masterton Data	1,142 (54%)	960 (46%)	2,102

The basic conclusion from the special characteristics of the data under study seems to be:

1. The successful gathering of useable data from 83% of the total population gives reasonable grounds for treating the data as deterministic rather than statistical; i.e. the analyses are virtually real descriptions of that population rather than being subject to

sampling variations.

2. Insofar as social class is a major structural factor affecting characteristics of a population, the data can be regarded as naturalistic but fulfilling requirements which might be made of a stratified sample, i.e. it comprises important segments of all social levels.

Table 4: Socio-economic and Educational levels of Homes of Masterton Secondary Schools Population

	SES %	Fathers' Educ. %
Upper	49.5	11.2
Middle	27.7	37.7
Lower	21.8	51.1
		$r = .40$

Reference to Table 4 will show that 51% of the respondents reported their fathers' education as level 1 or 2, (did not complete secondary school), 38% had completed secondary school or some non-university tertiary education, while the remaining 11% had either graduated or had some university education. Meaningful comparative data on N.Z. are not easily found. The N.Z. Department of Statistics (N.Z. People, 1966) reported figures for occupational divisions which can be summarized as follows:

Occupations requiring advanced training:	16%
Clerical and sales:	22%
Skilled, farmers, outdoor workers, transport, production, labourers:	54%

These figures are of little use for overall comparisons but they do suggest that in spite of the one in four pupils in a "select" private school, the population is not overloaded with pupils whose fathers have advanced educations. Rather, it could be said roughly that variety of school types has been attained without unduly distorting the representativeness of the environmental factor of fathers education. It remains true that the economic factor is possibly influenced by the number of pupils in "select" private schools. The only clue to economic status is fathers occupation. The difficulty arises again that N.Z. statistics as reported by the Dept. of Statistics use occupational categories which make little sense to the social scientist (e.g. "farmers, fishermen, hunters, loggers and related workers - 13.1%"). The recent NZCER

socio-economic scale used in this study is not a complete answer either as inspection of Table EV will show. Using the instruction to place "farmers" in level 2 of the descending scale, I found 41% of the respondents in SES 2. Since the level of living, including education, among farmers is almost certainly as wide as that of the total population, this device is of little help in classifying data for a secondary school population in which farmers' children are an important sub-group. A classification of data in broad upper, middle and lower SES sub-groups gives almost 50% in upper SES, largely as a result of the inclusion of the farmer occupation in SES 2, with 28% in middle SES and 22% in lower SES. Reference to Table 4 reveals that the distribution of fathers education has the opposite trend to that for SES, with a correlation coefficient of only .40. The contribution of education to SES is thus only 16%. At this point, therefore, it must be observed that fathers education promises to be a more useful variable than SES, and that SES as measured yields confusing classifications. Nevertheless, some analyses in the study use the SES classification, assuming that if it is highly weighted by the economic component such analyses will be comparable to one based on family income.

3. Since there is a wide representation of theoretically important structural factors, the data provide ample opportunity for sub-group analyses, each sub-group automatically having the degree of completeness that belongs to the total research population.
4. Linear relations can be sought in the data with the confidence that they are virtually, within the limitations of measurement, the actual relationships existing in that population.
5. While no grounds exist for assuming that the population studied is representative of the New Zealand secondary schools population, it can be claimed that the educational level of the homes as judged by fathers education is quite similar to national trends, and that insofar as it incorporates rather more pupils of rural origins (35%) than the most recent estimate of proportion in the national population in rural residency (23% according to N.Z. People, 1966), it does little to affect linear analyses, but provides a base for useful descriptive comparisons of major sub-group characteristics.

Data Collection

All standardized instruments and several specially printed questionnaires were administered as separate questionnaires, while the general information questionnaire and several smaller questionnaires

were brought together into one booklet.

The instruments administered were allocated as follows:

Forms III - VII:

- Student Questionnaire Booklet
- Family Life Questionnaires
- People's Wants
- Minnesota Counseling Inventory
- High School Personality Questionnaire
- Test of Effective Academic Motivation
- Phillips Occupational Preference Scales

Forms III - IV only:

- Academic Promise Tests

Forms V - VII only:

- Differential Aptitude Tests
- The World in the Year 2,000

The identification procedure was handled by first stamping code numbers for schools and serial number for respondents on complete sets of answer sheets and on specially prepared envelopes and enclosing complete sets of answer materials in the envelopes. In the case of reusable questionnaire booklets, a sufficiently large stock was obtained to ensure reasonably straightforward distribution and organization within any one school. Each student's identification was placed on the envelope and all materials were kept in envelopes between work sessions.

Meetings were held with principals; a general meeting of staffs of all seven schools was held at which I explained the research plan and the general data gathering task; separate meetings with staffs of individual schools were also held, at the time immediately prior to the administration of the instruments; a full briefing was given to a staff member at each school who was responsible for over-all organization of data collection; and finally I introduced the project to the whole school assembly at each school on the day of initial test administration. Administration was carried out by classroom teachers, following duplicated instruction sheets relevant to all stages of the work. Special efforts were made to help the slower pupils to complete their answers. A follow-up effort in all but one small school was undertaken to obtain completion of the incomplete materials found on first checking the returned materials. This was a quite arduous aspect of the task, since up to one in four pupils had some part of his answers incomplete for one reason or another. It was not surprising, however, that the task should prove difficult, since a total of over two days of pupil time was involved, and the work was

spread out usually over two weeks or so, in order not unduly to tire the pupils.

*Complete check lists of both the school and the project code numbers of pupils were compiled and kept, and a meticulous checking and re-checking of all pieces of material was carried out. All improperly completed materials were discarded with the result that, although quite a number of returned envelopes were rejected, a residue (85%) was obtained which could be depended upon as reasonably carefully completed answer sheets and questionnaires. In addition, about 75% of staff members from six of the schools completed the staff questionnaire and returned it in a sealed envelope.

In all, the pupils worked through over 100 pages of tests and questionnaires and supplied over 2,000 items of information each. Thus the total data collection represents over 4,500,000 items of response. From this material the data set of about 250 variables was derived. Major data collection was carried out in July and August of 1971, and some further material was obtained early in the third term, 1971.

Scoring. A major job of hand-scoring by the researcher and assistants was required for the student questionnaire, the Family Life Questionnaire (the parental child-rearing scales), People's Wants (the future self orientation score), the MCI, HSP_q, POPS, AFT, DAT and the Year 2,000 (the future world orientation scales). In addition the TEAM test was scored by optical scanning methods at Boston College and the CEI by optical scanning by the Syracuse University Psychological Research Center.

Analyses. Apart from the simple counting jobs carried out by computer for descriptive purposes, the major computing jobs were

1. correlation and factor analysis of the 150-item Family Life Questionnaire, to obtain parental practices scales
2. factor analysis of rational subscales of the 102-item Year 2,000 questionnaire to obtain factor structure of these scales
3. factor analyses of general family environment variables, of family relations variables, of intellectual variables and of non-intellectual variables, to find basic factors and to enable identification of dominant variables
4. stepwise multiple regression analyses on all dominant variables of outcome factors using selected environment and person variables as predictors.

Procedures 1,2 and 3 will be described in chapters 4, 6, 5 and 8 respectively. The remainder of this section will be devoted to a

brief account, first of the analyses carried out for the phase of the study now to be reported, second, of the further analyses to be reported in a later complete documentation of the project.

The basic assumption of the factor analysis model among multivariate techniques is that a set of observed variables can be interpreted as dependent on a set of unobserved variables (Van Geer, 1971, p128-129). The set of unobserved variables is calculated as a linear compound which has maximum variance. There are basic similarities between factor analysis and all other linear multivariate models such as multiple correlation, canonical correlation and path analysis. While it is possible to deal with variables in terms of their own individual vectors, and to relate these variables among single variables, as in bivariate correlation methods, the possibility is there that the vectors so viewed could in fact be fitted into a sub-space comprising fewer dimensions. The advantage lies in being able to describe the position of a variable in geometric space in terms of fewer co-ordinates and therefore more simply. An example would be to factor analyse a number of responses to items concerned with socio-economic status. What the analysis shows to be common to the items is the basic dimension for SES. A distinction is drawn by Cooley and Lohnes (1971, p130-131), however, between the scaling use of factor analysis, as in the example, and two other major uses. One is the reduction of the dimensionality of a set of variables, as in the Van Geer reference, above, and the other is in the identification of fundamental dimensions in a multivariate domain. This is the "construct-seeking" task of factor analysis, as in the analysis of mental abilities. It is the second and the third uses which are in view in the present investigation. Both in the analyses of single questionnaires and in the examination of multiple arrays of variables, it is the search for a number of dimensions underlying intercorrelations which is the major intention.

Cooley and Lohnes (1971) refer to the latter use of the technique as multiple-factor analysis. In a particular multiple configuration of tests of N dimensions and tests in which the p tests are converted to standard score units and plotted in the N space as points or vectors, the problem for factor analysis is to decide among the many linear combinations or reference axes those which most adequately describe the configuration. Although principal components analysis, using the maximum variance criterion, defines a unique set of reference axes comprising some combination of p variables, this solution is not usually useful for interpretation in terms of meaningful psychological constructs. By rotation of the derived principal-component

axes, alternative sets of axes are obtained. The advantage of the rotated solution usually is that the new co-ordinates are more "simple", meaning that any one variable is highly loaded on only one axis. Additionally, each factor has zero or near zero loadings on some variables. Thus the "membership" of a variable in a factor is very much clearer than in the much more general principal components analysis. The decision as to preferability of the many possible factor solutions is based on theoretical and logical considerations. In the Cooley and Lohnes example (pp133-136) the rotated solution to a fabricated example involving the size of rectangles gave two factors length and breadth, which, as they said "makes sense".

While it is not useful to repeat here the clear explanations of extraction of arbitrary orthogonal factors and of rotation to analytic factors as in Cooley and Lohnes (1971) and Van Geer (1971), there are two essential points to be clarified. These are to do with the number of factors and the question of oblique solutions. The question of number of factors, although answered in principle by the criterion that factors with small eigenvalues can be neglected, still depends on a decision as to what, in fact, is "small". The generally accepted rule of thumb is that, since all factor analysis programmes take eigenvalues in decreasing order, a statistical criterion can be used in the programme, and the usual is an eigenvalue of one. Additionally, Van Geer (1971) suggests that where a graph of the eigenvalues shows a series of high values and a sharp drop-off, then the factors in the right hand tail after the drop-off point can be neglected, regardless of the statistical criterion. Cooley and Lohnes (1971) are in accord with this in their view (p150) that "It is usually desirable to retain enough factors for rotation to demonstrate that all major factors have been accounted for and that some nearly unique factors (significant loadings on only one test) have been reached."

In addition, the criterion of orthogonality of factors can be questioned. Both the principal components and the analytic orthogonal rotations have the requirement that after the first arbitrary vector is found, each succeeding vector is to be orthogonal to all preceding ones. Since the procedure of looking for 'best-fit' linear compounds is involved, the question may be asked, 'What is the virtue of having the factors unrelated to each other?' Van Geer (1971, pp152-154) argues that it is not necessary that the factors be independent, and that oblique factors are "a more natural approach to the primary factor principle". Factors are chosen so as to be central within clusters of points, those clusters not usually being orthogonally located. The locations of the hyperplanes is

dictated by the requirement that many variables make small angles with them; as a result it is not possible to require simultaneously that the hyperplanes be orthogonal. The procedure for orthogonal rotation is varimax; that for oblique rotation is oblimax, and accounts for the "liberation from orthogonality". In fact, as Van Geer points out, this procedure encounters the risk of loss of parsimony. If the correlation between factors exceeds .30, Van Geer suggests that this amounts to confusion of factors and does not serve economy of description.

In the present study, both the 'number of factors' question and the 'economy of description' question are important. All of the multiple-factor work was carried out on an adapted version of the IBM 1130 factor analysis programme with both orthogonal and oblique rotation options. Programme limitation on the number of factors was ten and therefore in those few cases in which ten factors were obtained the question arises as to whether more factors might have been found had the statistical criterion of eigenvalues greater than unity run its course. Independence of factors becomes an issue on account of the very problem underscored by Van Geer. A central strategy in the research design is that of the use of factor analysis to identify major dimensions so as to know which variables are worth putting into a regression analysis. It is important that the factors leading to this decision be properly derived and meaningful. But in a sense, the possibility of overlap has an advantage, in that rather more variables will be identified as potentially important and thus safeguard against the mistake of over-economy and loss of information.

The stepwise linear regression technique as used in this study has been criticised by Cooley and Lohnes (1971,p57) in terms of the problem of fluctuations in results based on the same sampling procedures and by McNemar (1962,p185) - the latter by implication from the problem of capitalization on chance in the selection of "best" predictors. Cooley and Lohnes appear, however, (p57) to allow the procedure on either of two conditions, one of which it is claimed, has been met in the present study, viz. use of a very large and very representative sample.

The stepwise regression procedure is one of the family of regression techniques. In simple regression, data on a criterion and on a predictor variable being available, the procedure is designed to use the known relationship between two variables to predict one from the other. (Fox, 1969,p227). The object is to enable prediction from the known variable to the (unknown) criterion in other samples. As found in the original analyses the regression equation is simply an expression for the strength

of relationship between the variables concerned. The generality of the resulting formula in other samples is, of course, dependent on sample matching.

As applied to prediction from more than one factor, the technique is termed multiple regression. In this case it is necessary to find a set of predictors which are not highly related to each other and to estimate their combined predictive efficiency in such a way as to ascertain their respective contributions. Two types of coefficient are involved: the first is the partial correlation of predictor and criterion; the second is the beta weight assigned to the predictor to express its contribution relative to that of the other predictors.

The special characteristic of the stepwise procedure is that it adds or subtracts one predictor at a time to the regression equation, in order to obtain the "best" combination of predictors. Thus a series of regression equations is produced, with increasing predictive efficiency and with a clear test of the value of going further in the inclusion of more predictors. A statistical criterion is established in order to determine whether at each successive step in the procedure a variable is to be added or dropped. The criterion is that of contribution to the reduction of residual variance in the criterion, and the test used is the F-ratio, with a nominated criterion. (In the present study, F-level to remove variables was arbitrarily set at .05 and F-level to enter variables at .10).

The partial regression coefficient gives the strength of relationship between a predictor and the criterion when that predictor is in combination with others and all shared or mediated effects are removed. An example given by Keeves (1972,p117) was that of "annual income of head of household" which, considered alone, seemed strongly related to achievement, but in combination with the other predictors, this variable was found to make no significant contribution.

As used in the present study, the stepwise regression procedure determines the coefficient of a linear equation of the form:

$$y = b_0 + b_1 x_1 + b_2 x_2 + \dots + b_n x_n$$

which best conforms to a minimum variance criterion. As explained above, the predictors $x_1, x_2, \dots, x_n$ are entered into the equation in terms of a .10 entry criterion with the purpose of successively estimating "goodness of fit" among combinations of predictors of decreasing predictive power. If, according to the criterion of .05, a variable did not provide a significant improvement in goodness of fit, it was removed from the regression. Such a variable, as in

Keeve's example of fathers' income, which had appeared in zero-order correlation to be significantly related, is termed a suppressor variable. The advantage of removal of the suppressor variable in this way is that otherwise in many cases a distortion of the other relationships in the pattern can arise; its removal enables simpler and more meaningful interpretations of the interaction of the other variables. The analysis follows the sequence: correlation of predictors and criterion; application of Gaussian elimination inversion to compute a stepwise inverse of the correlation matrix; multiplication of the inverse by a vector containing the dependent variable correlated with each independent variable to form normalized regression coefficients. After the inversion process has been carried out for a variable it is compared with the variance criterion nominated by the user to determine its significance. A variable of significant effect is regressed on the dependent variable and the regression coefficient for the subset so far accepted is computed and made available for printout of stage variance and for use in the next step of the analysis. The final step is the best-fit combination of independent variables. Optional output of the programme includes, among other statistics, means and standard deviations of variables; correlation matrix; multiple correlation coefficient R ; square of multiple correlation coefficient - R^2 , calculated as sum of squares due to regression over adjusted total sum of squares; regression coefficients - B ; partial correlation coefficients -

$$r_i = a_{in} / \sqrt{a_{ii} a_{nn}}$$

where n denotes the dependent variable and a is an element of the stepwise inverse of the correlation matrix; normalized regression coefficients - B' :

$$B'_i = B_i S_i / S_y$$

where S_i is the standard deviation of the i^{th} independent variable. Standard errors of means of the predicted dependent variable, of regression coefficients and of normalized regression coefficients are also available, and the F-test for entry and removal of independent variables is printed at each step.

It is also possible to obtain a printout, for each data case, of the predicted value of the criterion variable and the difference or residual, between the predicted value and the actual value. Most of the other options were requested, but it was decided not to use the residual printout, since the large number of cases would have rendered

the information unwieldy. It is recognized, however, that were the results to lead to a decision to use selected regression equations for prediction in other samples, it would be necessary to examine the residuals and get an estimate of the overall usefulness of the equation as developed from the original data.

Delimitations of the Present Report

Propositions 1-7 (pp75-76) have been investigated and results will be reported in the following pages. Standard environmental and personality variables will be included, but neither the special TEAM test, the CEI, nor the teacher characteristics are incorporated at this stage. This report will be regarded as Phase I:

Structure and Relationships of Standard Environmental, Personality and Ability Factors in Secondary School Adolescents.

Phase II will have the following major objectives:

1. The incorporation of TEAM, CEI and teacher variables in selected prediction analyses.
2. The development of canonical factor solutions of the interrelationship of sets of environmental, intellectual and non-intellectual variables.
3. The comparison of outcome variables on sub-groups with different combinations of parental child-rearing practices.
4. Reduction of data to standard units and comparison of all major sub-groups on research variables.
5. Discriminant function analysis to predict group memberships, viz. delinquency, streams, interest, attitudes, aspirations.
6. Path analyses for males and females with intellectual and non-intellectual outcomes as destinations.
7. Item factor analyses on major questionnaires (viz. Family Life Questionnaire, Future World Orientation, Minnesota Counseling Inventory, High School Personality Questionnaire, Classroom Environment Index) to test existing scale assumptions. The purpose of this for the American instruments is clear. . The FLQ and FWO as used in this study were reduced to scale dimensions by factor analyses of limited programme size as will be explained. In both cases, interrelationships with other variables have proved to be of sufficient importance so that a full item factor analysis on a large machine is fully justified in order to maximize the usefulness of these data and those instruments.

Chapter 4

ASSESSMENT OF PARENT-CHILD RELATIONS

Development of the instrument (FLQ) to assess parental child-rearing practices was undertaken as a separate study by a post-graduate student and the present author (Coates and Webster, 1971). A full report of that study will appear elsewhere. But a brief description will be provided in this chapter. The form of the scales used in the current research was prepared as a research instrument only and is not necessarily the same in every detail as that which will be reported subsequently. It is reasonable to suppose, nevertheless, that the basic factors will remain substantially unaltered.

Proceeding on the basis of major research work on the structure of child-rearing practices in other countries (Symonds, 1939; Baldwin, 1955; Sears *et al.*, 1957; Roe, 1957; Bandura and Walters, 1959; Rosen and d'Andrade, 1959; Schaefer, 1959; Bronfenbrenner, 1960; Roe and Siegelman, 1963; Becker, 1964; Rollins, 1967; Devereux, *et al.*, 1968) a set of theoretical categories was constructed in an attempt to do justice to the dimensions and specifics found useful in other studies. The main dimensions were considered to be:

Love vs Hostility

Autonomy vs Restriction

Demanding vs Non-demanding

It was decided that items should come from two main sources: those from major extant overseas studies which appeared most useful in those studies and most pertinent for New Zealand; and those items specially invented for New Zealand conditions which seemed necessary in view of knowledge of this culture. About forty sub-categories were created so as to ensure that within each major dimension the relevant manifestations were represented in sufficient items. Two types of item were developed: those attempting to elicit information about specific parental behaviour; and those designed to obtain respondents' feelings about areas of the parent-child interaction. Special areas of New Zealand child-rearing practices were hypothetically identified as the use of anger and the presence of anxiety and sensitivity in the parents, the latter concept having been adapted from Rollins. Accordingly, in the item construction, particular care was taken to add to the categories more readily identified in the literature, those dealing with anger and anxiety. These were:

Use of physical punishment

Parental tension

Expressive rejection

Arbitrary punishment

Unpredictable reactions

Anxiety

It had become clear from the literature that meaningful and useful information could be gained from children's perceptions. Therefore it was decided to construct a questionnaire to be administered to children.

The general procedures were as follows:

1. Items were selected and constructed for a reading range of pre-adolescence and older, an initial pool of over 300 items being created.
2. After careful examination of items, and consultation with experts outside the research team a test form of 268 items was determined.
3. Items were assembled in random order in a duplicated questionnaire and administered to a small group of bright 11-12 year olds. Their judgments as to difficulty and clarity of meanings of items were solicited, and some modifications were made.
4. A first research form for reliability testing of the questionnaire of 268 items was administered to a stratified selection of bright, average and lower ability classes, comprising about 120 pupils, of equal sex numbers, in Form I of a city Intermediate school and was re-administered after an interval of three weeks. Scoring on the items was by means of a graded response format, with meanings of responses given in words:

e.g. 48. She smacks me:

Almost every day	()
About once a week	()
About once a month	()
Only once or twice a year	()
Never	()

A 1 - 5 score was assigned.

5. Correlations of all pre-test and post-test item responses were calculated as reliability coefficients.
6. On the basis of the reliability coefficients and some theoretical expectations, a 150-item instrument was derived, for the purpose of factor analysis to find child-rearing dimensions and to provide a basis for research scales.
7. The 150-item questionnaire was administered to a full ability range of Form IV classes at one city school, a total of 124 Boys and 169 girls.

8. Scores on the 150 items were submitted to correlation analysis on the IBM 360/50 computer at IBM International, Wellington.
9. The correlation coefficients were divided into sets involving not more than 70 items, which were factor-analyzed on the Elliot 503 computer of the Department of Scientific and Industrial Research Applied Mathematics Division, Wellington. Factor runs to both unspecified and theoretically based numbers of factors were completed on each set of coefficients and the results compared. Solutions to 15, 6, 2, 3 and 5 factors were examined and the conclusion reached that the 5-factor solution was theoretically satisfying, and yielded meaningful interpretations.
10. For the production of the questionnaire in the present study a smaller set of items was selected by using all those items with a reliability estimate of .50 or more. In actual fact there were 63 items for which test-retest coefficient was $\geq$.60, and a further 64 with a coefficient between .50 and .59. These 127 items were selected for the research instrument. This was done in the knowledge that not all of the items would be used in the scales as so far developed, but so as to provide for further future factor analysis testing of the dimensionality of the instrument on this larger, more representative set of data observations. 'Mother' and 'father' versions of the instrument had been developed, and both these were administered in this investigation. No separate factor analyses had been carried out on 'father' data, nor on separate boy and girls responses. (Bronfenbrenner, 1968, had reported stability of dimensions across the 4-way sex interactions.)
11. Both 'mother' and 'father' questionnaires were scored according to the 5 scales.

The scales may be found in Appendix A. The tentative titles are:

- I Support - Understanding
- II Anger - Rejection
- III Permissiveness - Non-Intrusiveness
- IV Anxiety - Sensitivity
- V Demand for Achievement

It was felt that these five scales were highly meaningful as a first dimensionalization of parental child-rearing practices as based on young adolescents' perceptions. The hierarchical importance of the support and anger dimensions and the clear emergence of an anxiety dimension cannot escape notice, especially since they bear out the theoretical assumptions concerning the existence of anger and anxiety as two affect factors qualifying the impact of the classical interaction of the support and control dimensions.

It is the scores on the ten scales (five for mother and five for father) which have been included in environmental factors and as predictors in the report.

Chapter 5

FACTORS IN THE FAMILY ENVIRONMENT

The purpose of this chapter is to report the results of the factor analyses of contextual variables in two categories, the general or structural family environment variables, and the measures and ratings of family relationships.

Structural factors

Results of the factor analysis of the 15 structural variables of family environment are found in Table B.I in Appendix B.

A summary of the results is given hereunder, as Table 5, for quick reference:

Table 5: Summary of Factor Analysis of Structural Variables of the Family Environment

Factor I:	<u>Parental Education</u>
16.21%	Fathers Education Mothers Education Socio-economic Status
Factor II:	<u>Urban Residence</u>
13.45%	Urban Residence City Primary School Attendance Pre-school Education Intermediate School Attendance
Factor III:	<u>Private School Attendance</u>
9.82%	Non-State Primary School Attendance Religious Practice - Family (-)Intermediate School Attendance Religious Affiliation - Family
Factor IV:	<u>Family Size</u>
7.73%	Family Size Race Maori
Factor V:	<u>Father Absence</u>
7.24%	Father Absent Mother Employed
Factor VI:	<u>Father Decease</u>
6.85%	Father Deceased

This solution accounted for 61.4% of trace. Six factors were extracted, with correlations between oblique primary factors no higher than .27. This correlation indicated a slight tendency ($r^2 = .07$) for private school attendance and father absence to be associated. Communalities for variables

ranged from .79 down to .36, the solution being most exhaustive in the case of urban residence, school type, fathers education and father presence. The solution is less satisfactory in terms of unexplained variance on ^{employment,} mother, religion and pre-school education. Further factors would doubtless be small and specific, however, and it must be assumed that these variables are more complex than the other variables. Their location in the factors seems meaningful, however, and the total factor structure appears logically satisfactory. In other words, it is believable that the main social environment and life structure factors for secondary school youth are family socio-economic level, urban vs. rural residence, state vs. private school, family size-ethnic life style, and father presence.

Within the factors, certain features are notable. In Factor I, fathers education is shown to be the dominant variable in socio-economic level. That the SES index has not proved more definitive is no doubt due to its lack of differentiation among farmers, and the fact that it incorporates a lot of things beside social class. Parental education is of clearer definition and can be expected to be independent of other measures in a way that is not possible for the SES measure as defined. Reasons for lack of clarity in the SES measure could be many, but one obvious one is that there is not a simple linear relationship between educational level and occupational level in New Zealand. Evidence of this fact may be seen in Table E.XI, where it is found that while farmers are of second highest occupational level, they have relatively low average educational level. Similar observations could be made about other SES 2 occupations, where, for instance, a manager may have very considerable training and responsibility or very little. In brief, it appears that a socio-cultural rather than a socio-economic factor stands at the head of the hierarchy of social environment variables in this study.

Factor II depicts very sharply the major structural differences in the early lives of town and country children. The pattern is town residence and attendance at pre-school, city primary school and intermediate school. This means that comparisons between adolescents of town and country origins are by implication comparisons of different early schooling effects as well as home effects.

Factor III suggests that it is not so much material advantage as religious practice of the family which differentiates pupils of private from state schools. This is a reflection of the fact that by far the largest single entity among private schools is Catholic schools. It leaves open the question of homogeneity of private schools, although reference to Table E.XV will show that religious practice and affiliation are very much higher in

higher SES and therefore presumably in the families of private school pupils. In addition to the religious component of family background, the private school factor is also negatively loaded on intermediate school attendance. Thus, to discuss private schools is, to some degree, to discuss those from religious homes and who did not attend intermediate school.

Factor IV clarifies one matter above others, namely that Maori race, rather than being part of some composite of socio-cultural variables, is related to a structural variable - family size. The low strength of the largest zero-order correlations (RM x FS; $r = .17$; RM x SES; $r = .18$) would indicate that Maori race as measured is not a single variable, any more than is Pakeha race. The only distinguishing feature in general socio-cultural terms is that Maori families are larger.

Factor V makes it clear that, though mother employment may be a matter of individual fulfilment in isolated cases, it is associated to some degree with hard necessity in the sample. It is father absence i.e. separation of father and mother, which is systematically linked with mother employment. The link is of a diffuse nature, however, as the bivariate coefficient (FPA x MEM; $r = .12$) indicates. Therefore it must be noted that though there is no general relationship between father absence and mother employment throughout the families, there is a pattern which has considerable importance in which father absence and mother employment are the dominant features. There is apparently no other pattern of environmental variables in which parental separation is a feature.

Factor VI is a specific factor of father decease. It is not a component of any underlying set of socio-cultural features. Thus father decease is randomly distributed throughout major environmental dimensions of the family and presumably is not systematically associated with the major factors of social status, residential location and school type attended.

It seems reasonable to accept these factors then as a simplification of the variety of structural press features of the environment. Parental education, residential location, school type, family size and father presence would account for a large part of all environmental effects on secondary school adolescents.

Family relationship factors

Results of the factor analysis of the 20 variables salient to family relationships may be found in Tables CII and CIII in Appendix C. Analyses were carried out for males and females separately. A summary of the factors is given in Table 6.

Table 6: Summary of Factor Analyses of Family Relationship Variables for Males and Females

Males (N = 1062)		Females (N = 865)	
Factor I (both sexes) <u>Respect and Support</u>			
20.34%	Respect from mother Respect for mother Respect from father Respect for father Mother Support Family Warmth	21.59%	Respect for mother Respect from mother Mother Support Family Warmth Respect from father Respect for father (-)Mother Anger-Rejection Parental Companionship
Factor II (both sexes) <u>Mother Demand/Anxiety and Father Support</u>			
13.02%	Mother Demand Mother Anxiety-Sensitivity Father Support Mother Permissiveness	13.53%	Mother Demand Father Support Mother Anxiety-Sensitivity Mother Permissiveness
Factor III (both sexes) <u>Parental Anger/Father Anxiety</u>			
10.96%	Father Anger-Rejection Father Anxiety-Sensitivity Mother Anger-Rejection	9.90%	Father Anxiety-Sensitivity Father Anger-Rejection Mother Anger-Rejection Father Demand
Factor IV (both sexes) <u>Permissive-Demanding Father</u>			
6.11%	Father Permissiveness (-)Parental Attitude: Non-smoking Father Demand	6.27%	Father Permissiveness Father Demand
Factor V	<u>Companionship</u>		<u>Anti-Smoking</u>
5.49%	Parental Attitude: Companionship Parental Attitude: Chores	5.68%	Parental Attitude: Non-smoking (-)Parental Attitude: Attainment
Factor VI	<u>Parental Mobility Value</u>		<u>Parental Cooperation Value</u>
5.30%	Parental Attitude: Mobility Parental Attitude: Attainment	5.11%	Parental Attitude: Chores Parental Attitude: Companionship
Factor VII			<u>Parental Mobility Value</u>
		5.06%	Parental Attitude: Mobility

The female factor solution accounted for 67.15% of trace and the male 61.23%. All male factors were almost exactly matched by female ones with

the sole exception that a parental anti-smoking attitude was a negative component of the permissive father factor for males, but for girls it was in another factor as a separate dominant variable in bi-polar relation to a parental attainment value.

The major factors for both males and females are to do with respect-support, demand-anxiety, rejection-anxiety, and permissiveness-demand, these factors containing about 44% of total matrix variance. Of less importance but still of significant size are the factors concerned with companionship, mobility, cooperation and smoking. Affect and control loom much larger, nevertheless, than cooperation, duty and mobility pressures.

Correlations between factors differ for the sexes. In females the first and third factors (Respect-Support and Anxious-Rejecting Father; $r = -.32$) are negatively related. This means that the anxious sensitive father is less likely with the respecting-supporting relationship. Thus there is some tendency for girls in a respecting-supporting family relationship to see their fathers as less anxious and angry.

In females again, there is a positive relationship ($r = .43$) between the fourth (Permissive-Demanding) and fifth (Anti-Smoking) factors. Thus girls who see their fathers as permissive but demanding are more likely to report a parental attitude against smoking. It could be hypothesized that the permissive-demanding dimension is more likely in higher educational levels, in which smoking in secondary school girls would be disallowed for the same reasons as the permissive-non-intrusive relationship exists - i.e. there is a desire on the parents' part to encourage some pattern of acceptable social traits in a girl, among which mature self-respect and non-smoking would rank high.

In males, there are negative relationships between the first factor and the fourth ($r = -.30$) and fifth ($r = -.40$). This indicates that Respect-Support tends to go with a less Permissive-Demanding Father and with a lesser expectation of parental companionship and chores. The tendency in this population, then, is for the indulgent but demanding attitude and the 'companionship combined with a set of prescribed duties' kind of attitude to go with less perceived respect and support in the parent-child relationship.

These relationships among factors are of moderate or low order, but still do illustrate the peculiar characteristic - and potential weakness - of oblique rotations.

Communalities for the male and female solutions are not of equal strength. The range for females is from .860 to .447, while that for males is .845 to .374. But the cumulative percent of trace, which can in fact be calculated as the mean of the sum of communality coefficients, is little

different - 61.23 for males and 67.15 for females. It seems plausible that females would respond more carefully to questions and thus yield better measurements and correspondingly stronger relationships between variables and "clearer" factors. (Garai and Scheinfeld, 1968, note girls' verbal superiority.)

The sets of factors as listed appear to be a useful and meaningful reduction of dimensions for the variables involved. Factor I in both male and female data sets makes reciprocal respect primary, with a strong mother-support and family warmth component in the case of females and the same but of somewhat less strength in the case of males.

Factor II in both male and female cases comprises some dynamic tension of a mother relationship of demand and anxiety and a father relationship of support. This factor would seem to fit well some popular images of the New Zealand family in which control and management centres on a tense mother while the father "gets away lightly" with minimal management responsibility but a privileged ability to share the good times with the children. (Ritchie and Ritchie, 1970)

Factor III is virtually identical for the sexes and identifies a systematic tendency in the parents as perceived by their children to a combined anxiety-sensitivity in the father with anger-rejection on the part of both parents. The factor is a variable, and therefore it suggests that the anxiety-sensitivity and the angry rejection tend to vary together. The underlying dimension of these variables is apparently the emotional health of the father, which is expressed in the extreme case, not only in his own anxiety and his pathological rejection of his children, but also in a dependency-generated anger-rejection toward the children on the mother's part. It is significant that mother-anxiety as defined in Factor II is rooted in demand and thus social conformity pressures in the mothers, while anxiety in fathers is rooted in a factor containing a large quantum of anger. As expressed in child-rearing, the anxiety components in mothers and fathers have importantly different meanings, for in mothers it seems that they are angry because of external demands and some desire for social acceptability, while in fathers anxiety exists along with anger as some sort of self-generated implosive-explosive process of an unconstructive nature.

Factor IV reflects the underlying goal of socialization which gives rise to the apparent paradox of permissiveness and demand. It is part of the ethos of the educated person to create a climate of independence for the adolescent and at the same time establish an awareness of high expectations derived from standards of excellence. Higher levels of this dimension are apparently experienced as alienating. Exploration of the relationship of these dimensions with criterion variables, to be discussed in later chapters,

will cast light on that problem.

Factors V, VI and VII for females and V and VI for males are entirely concerned with parental attitudes and are little different^{for} males and females, except that for females a non-smoking attitude of parents appears as a separate factor in bi-polar relation to a parental attainment attitude. It could be expected that the companionship, cooperation, mobility and non-smoking attitudes attributed to parents will have some relationship to criterion variables.

Conclusion. Factor analyses of the structural and relationship variables of the family environment were carried out, using the oblimax criterion for oblique rotation of the primary factors. The 15 structural variables were reduced to dimensions of parental education, residential location, early school-type, family size and father presence. The 20 parent-child interaction variables were reduced to three major affect dimensions, basically reflected in support, anxiety and rejection, and several factors reflecting control, cooperation and mobility values. It is considered that these factors are important major elements of adolescent environment, both contemporaneous and historical, and that they can serve as a guide to understanding the complex environmental influences bearing upon adolescents. Specifically, these factors or their dominant components can be used as analytic devices and linear variables in the design of further analyses.

Chapter 6

FACTORS IN ADOLESCENTS' PERSPECTIVES ON
FUTURE HUMAN SOCIETY

The questionnaire which was used for the clarification of the nature of adolescents' views of social affairs was entitled: "The World in the Year 2,000", with the sub-title: "Perspectives on International and Domestic Developments". It was prepared for and administered to young people by the European Co-ordination Centre for Research and Documentation in Social Sciences, Wien, Austria. New Zealand data collected by Shallcrass of Victoria University of Wellington are currently being analyzed in Sweden. Thus the construction and usefulness of the questionnaire were assumed by reputation and recommendation.

Since the questionnaire had been used with apparent success in Wellington, it was decided, in the absence of research reports, to reduce the dimensionality of the 102-item instrument and thus simultaneously obtain information about the structure of adolescent perspectives on social-political matters and provide a smaller number of criterion variables for inclusion in other analyses. This chapter will report the factor analyses which led to identification of dominant variables for potential inclusion in other analyses.

Unfortunately it was not possible, on account of machine-space limits, to handle all 102 variables in a factor analysis. The first step therefore, was the organization of the items of the questionnaire into a manageable number of rational scales. Thirty scales were identified, containing varying numbers of items and a lesser or greater complexity of logically related content. No claim for internal validity or reliability of the scales is advanced at this stage. They are not expected to be retained in their exact form when an item factor analysis becomes possible. However, it is assumed that if the rationale for selection of scales and items has been valid then to some degree a criterion of construct validity can be expected to emerge in a factor analysis of the scales.

In Appendix D. 1 are found the 30 FWO scales selected from the World in the Year 2,000 questionnaire.

Results of the factor analysis of the 30 scales are found in Appendix D. 2. The following Table presents suggested factor titles in terms of the inferred content of the students' future expectation and hopes, and notes the percentage of variance accounted for by the factor:

Table 7 : Summary of the Factor Analysis of the
30 Rational Scales of the Future World
Orientation Questionnaire

Factor I.	<u>War</u>
9.78%	Q.3. War between races
	Q.2. War between rich and poor
	Q.1. War between capitalist and socialist
Factor II.	<u>Social Breakdown</u>
7.15%	D. Family breakdown
	G. Mental health breakdown
	F. Homogenization of Society (-)
	E. Greater leisure (-)
Factor III.	<u>Hope for Urbanization and Interiority</u>
5.71%	L. Hope for urbanization
	I. Hope for interiority
	J. Hope for non-breakdown of family
Factor IV.	<u>Peace-Worker</u>
5.19%	P.5. Self-role in peace realization
	R. Activism - optimism
	C.3. N.Z. involvement in World War
	O.7. No justification nuclear war
Factor V.	<u>Anti-Scientism</u>
4.53%	N. Disapproval scientific control
	M. Disbelief scientific control
	O.5. Inevitability of war
	O.4. Big power starts war
Factor VI.	<u>Women's Liberation</u>
4.08%	H. Change from adult male leadership
	K. Hope for non male adult leadership
Factor VII.	<u>Militarism</u>
3.88%	P.3. Peace through military strength
	O.7. No justification nuclear war (-)
Factor VIII.	<u>New Zealand Safety</u>
3.65%	O.2. N.Z. escape war damage
	B. Self-world optimism
	O.1. Disarmament
Factor IX.	<u>Future Awareness and Concern</u>
3.49%	A. Extent of future awareness
	O.6. No justification non-nuclear war
	C. Change toward interiority
	P.1. Disarmament

Factor X. Co-operative Means to Peace

3.42% P.4. Peace through non-aggressive co-operation

 P.2. Peace through abolition of inequality

Inspection of the communalities estimate (h^2) in Table D.IV (Appendix D) shows that while some of the scale-variances are not satisfactorily exhausted by the 10 factors, the majority are in the .50-.60 range. Although this is not ideal, and would suggest that an item factor analysis would be desirable, it is probably a sufficient basis for accepting the scaling and factor solution as a provisional sorting of the large number of variables in the questionnaire. For the present study, the main utility of the factors is in identifying those dominant variables which can usefully be incorporated in other analyses as representing major dimensions of adolescents' future outlook. Obviously the first two factors, to do with war and social breakdown, are of greatest weight but the intrinsic interest of aspects of others is such that some subjective preference must be allowed to enter the decision as to which variables will be so included. Accordingly, scales Q.3, D, P.5, H, B, O.6 and P.2 will be chosen as representing factors I, II, IV, VI, VIII, IX and X in further analyses in this document. These include war, family breakdown, self-role in peace, women's and youth leadership, optimism, anti-war and peace through abolition of inequality. The final criterion for selection of variables for further analyses was the repeated presence of these variables as dominant components of factors in other runs to 8, 7 and 6 factors. Thus these 7 variables represent a compromise between the most exhaustive solution (10 factors) and the other runs.

Chapter 7

CHARACTERISTICS OF PUPILS IN SPECIAL GROUPS

Arguments for multivariate methods notwithstanding, the greatest parsimony is sometimes attained by simple counting of heads in social sub-groups. This chapter reports the numbers in various structural groups, such as schools or race, and in various nominal groups, such as delinquents, who are characterized by major distinctions of memberships, attitudes, perceptions and behaviours. The dependent variables are all discrete and are to be distinguished from the truly continuous variables (e.g. personality or aptitude scores) which are not, except in a few cases such as the IF score, subjected to this kind of analysis. All tables of data for this chapter are found in Appendix E.

Numbers in Seven Schools* in Socio-economic Classes

Table EV shows the marked differences in socio-economic class levels of the pupils in the seven schools. Taken from greatest to least, the schools contain the following proportions of highest SES:

St. Matthews Collegiate	19%
Rathkeale College	16%
St. Josephs College	11%
St. Brides College)	
Solway College)	8%
Wairarapa College	7%
Makora College	6%
Total sample	9%

Another way to see the picture is by numbers and percent in the upper two SES levels. The order is:

St. Matthews	89%
Solway	88%
Rathkeale	86%
St. Josephs	52%
St. Brides	47%
Wairarapa	39%
Makora	27%
Total	50%

Conversely, the percent in trades and manual levels in SES at Makora was 61%, at Wairarapa 48% while at the other end of the scale, the numbers were Rathkeale 9%, Solway 10%.

* See Appendix L. for fold-out description of schools.

These figures serve simply to confirm what is already implicit in the existence of private schools, dependent on fees and limited state support - that there is a very wide discrepancy in social class origins and consequently in peer environment, of the pupils in these as compared with state schools.

Numbers in Seven Schools Reporting Different Educational Levels of Fathers

Table E. VI presents the differences between schoolsⁱⁿ levels of education of the fathers of the seven school sub-groups. The predominant tendency, as expected, is for fathers to have completed not more than secondary school education. In fact almost 80% of the fathers were of this level, with about 50% having less than a complete secondary school education. This figure may be compared with the percentage for each school whose fathers had not completed secondary school:

St. Brides	62%
Makora	60%
St. Josephs	54%
Wairarapa	53%
Solway	43%
St. Matthews	38%
Rathkeale	32%

Thus, 'lower' fathers education is found in roughly one in three of the most privileged schools and two in three in the newer state school and the Catholic girls school.

When the figures for 'some or complete' university are summed, the percent found in the schools ranges from about one in three at Rathkeale to three in a hundred at Makora.

Numbers in Seven Schools Reporting Different Education Levels of Mothers

Figures for mothers education may be found in Table E. VII. While the pattern of school differences remains the same, the range of differences appears considerably less than in the case of fathers education. Whereas in the case of fathers education there were about 50% at the lower two levels and 21% beyond secondary school, in the case of mothers there were 47% at the lower two levels and 14% beyond secondary. Middle-range education (levels 3 and 4) includes 38% of fathers and 49% of mothers. Thus greater homogeneity of mothers education but greater differences in fathers education characterize the students.

These differences hold true for school comparisons also, the percentages whose mothers had completed or done some university work ranging from 2.3% at Wairarapa, 2.8% at Makora, 3.1% at St. Brides and 3.4% at

St. Josephs to 8.2% at both Solway and St. Matthews and 11% at Rathkeale. In the same order, the percent for fathers was 8.4%, 4.1%, 5.7%, 12%, 10.2%, 22.6% and 25.6%.

Numbers in Seven Schools from Selected Life Categories

A large number of important aspects of social-educational experience are summed up in Table E. VIII in terms of school sub-groups. The main tendencies and differences will be noted and only necessary brief comment made.

Urban residence is predominant at Makora (77%), St. Brides (71%), Wairarapa (66%) and St. Josephs (65%), but accounts for little more than half (59%) of enrolments at Rathkeale and considerably less than half at St. Matthews (44%) and Solway (35%). Thus the two state schools and the two Catholic schools comprise two-thirds to three-quarters city pupils, while the non-Catholic girls private schools are more than half of rural-origin pupils. Rathkeale is in neither camp, but four out of ten boys are of rural origin.

Pre-school attendance is markedly higher in the two schools which have been shown above to have highest social status and education of parents - Rathkeale and St. Matthews. These two had nearly one in two pupils with pre-school education while the other five had about one in three. It may be supposed that the lower average socio-economic status would explain the lower pre-school attendance among the four 'city' schools while rural residency would account for lower average pre-school attendance among Solway students.

Attendance at city primary school runs pretty evenly for all seven schools, about 10% ahead of city residence in childhood. The dominant tendencies among the schools in terms of urban-rural residence are therefore repeated in the tendency to city primary school attendance. Only St. Matthews and Solway can be said to have about half of their enrolment of country primary school origins. The other five have more than three in four of formerly city primary school education.

Attendance at private primary school is, of course, far less among the two state secondary school groups (6% and 7%). Three in four of the students at the two Catholic colleges attended private (presumably Catholic) primary schools. One in two Rathkeale and St. Matthews students attended private primary schools, but less than one in five Solway students did so. The higher rural component in Solway is no doubt reflected here, and it may be supposed that a large proportion of Solway students attended country primary schools.

Intermediate school attendance is the predominant tendency among the state secondary schools (89% and 76%), is lowest among the Catholic girls (St. Brides, 8%) and among the girls of highest parental education (St. Matthews, 7%), but somewhat higher for the girls of the private school of more strongly rural origin (Solway, 22%) and for the boys private schools (St. Josephs, 15%; Rathkeale, 24%). The clear overall tendency however is for about four in five state secondary students to have attended Intermediate School, and from one in four to as few as one in twelve in the private secondary schools. The overall figure of 54% is therefore quite misleading.

Mother employment is reported by 40% of the students. Highest figures are those for Makora (51%) and St. Brides (45%), while the lowest are Rathkeale, St. Matthews and Solway (all 28%). It is important to note that the two schools with highest rate of mother employment are also those with the greatest number of mothers without secondary education and the highest numbers of fathers with not more than a secondary school education.

The overall percentage with father deceased is 5%, lowest in one school being Solway (1%) and highest St. Matthews (8%). This possibly reflects the rural element at Solway, while it throws light also on the fact that different patterns of selection exist.

In comparison, while the overall percent reporting father absent from home is the same as for father deceased (5%), it is Makora, St. Josephs, Wairarapa and St. Matthews which have the higher numbers (7%, 6%, 5%, 5%) and Rathkeale the lowest (2%). This latter would be consistent with the fact that Rathkeale is a boys private school selected by families, 86% of whom are in the upper two levels as judged by fathers occupation.

Maori race forms 11% of the population studied. Percentages in the schools are Makora 15%, Wairarapa 12%, St. Josephs 11%, St. Brides 10%, St. Matthews 9%, Rathkeale 8%, Solway 5%. It is obvious that the pattern is that of decreasing Maori enrolment with increasing socio-economic status of the school population. It could also be said, however, simply that Maoris do not go to boarding schools so readily, and this may be by taste, or by financial considerations, or by church affiliation, or as a result of lesser educational aspiration. All of these could be seen, however, as aspects of the advantage-disadvantage distinction affecting Maoris.

Differences in delinquency detected are obviously differences between state and private schools. It is notable, however, that it is the four schools with male pupils which have delinquents officially recorded (Makora 4%, Wairarapa 4%, Rathkeale 1%, St. Josephs 0.5%) while the girls schools record none. The overall rate of 2.5% is very slightly in excess

of that for New Zealand. If the figures for the two state schools alone were considered the rate would be 173 at these schools for every 100 in the country as a whole.

(Note: In the comparisons to follow, rate of indicator is expressed as a ratio of one percentage to another.)

Numbers of Junior and Senior Pupils in Selected Life Categories

Results of frequency tallies on descriptive factors of juniors and seniors are given in Table E. IX. Senior pupils are more likely than Juniors to be from private primary school (1.4:1.0); less likely to have attended Intermediate school (0.8:1.0); more likely to have father deceased (1.3:1.0); less likely to have father absent (0.7:1.0); less likely to be of Maori race (0.6:1.0); less likely to be delinquent (0.7:1.0); more likely to be of the upper two socio-economic levels (1.3:1.0); more likely to have a father of tertiary education level (1.3:1.0); more likely to have a mother of tertiary education level (1.3:1.0); and less likely to be a family of six or more children (0.7:1.0).

The strongest differentiating factors characterizing seniors are private primary school, non-absence of father, non-Maori race, non-delinquency, socio-economic advantage, higher parental education, smaller family size. Thus these factors make success and continuance more likely.

Numbers of Male and Female Pupils in Selected Life Categories

Results of frequency tallies on descriptive factors of boys and girls are found in Table E. X. Only those of apparent considerable difference are reported. Females are somewhat more likely (42.5%) to have their mothers employed than are males (38.0%), but some of this could be accounted for by the slightly disproportionate numbers of boys of higher socio-economic status.

A higher proportion of males (13.20%) than females (9.24%) are Maori, indicating less likelihood (7:10) of Maori girls being in secondary school.

Numbers of Rural and Urban Pupils in Socio-economic Classes and Parental Education Levels

Table E. XI shows the numbers and percentages of pupils of rural and urban residence whose parents occupy different SES, FED and MED levels. The most marked tendency, brought about by the large representation of farmers, is that toward SES 2. 500 of the 750 rural pupils, or 66.66%, are in SES 2. Thus two in three of those classed as rural report their fathers as farmers. Almost one in five of the rural families are of unskilled or semiskilled levels. By comparison with the rural families, urban families are more in the trades and manual levels (48.5%:23.5%;

or 2.1:1.0), and SES 3 and 1 contain more than twice the proportions among urban families as in rural. In brief and over-simplifying, rural families are two thirds farmers and one quarter manual workers; urban families are 50% manual workers, nearly 40% managers, owners and professionals, and 10% clerks and shop assistants.

The incongruence of SES and FED becomes apparent, however, when it is seen that while 71% of rural families are of the two upper SES levels, nearly 60% of the fathers have less than a complete high school education. In comparison, only 46% of urban fathers were of this level of education. Tertiary non-university qualifications are twice as prevalent among urban fathers (12.21% to 6.13%) and university qualifications almost three times as prevalent (9.61% to 3.33%).

Typical levels of mothers education differ from that of fathers particularly among rural families. Whereas nearly 60% of fathers of the rural pupils were of less than secondary education level, only 41% of mothers were of these levels. Urban mothers in comparison, were almost identical with fathers in respect of percentage at these levels. A greater percentage of rural mothers (54%) than of urban mothers (46%) were of middle level education. Rural and urban mothers alike had less than 5% with any university education.

Numbers of Rural and Urban Pupils in Selected Life Categories

Results of the frequency tallies on various descriptive life-variables for rural and urban pupils are to be found in Table E. XII.

Urban pupils outnumber rural pupils in pre-school attendance (2.8:1.0); in city primary school attendance (3.2:1.0); in Intermediate School attendance (2.1:1.0); in mother employment (1.8:1.0); in father absence - not deceased - (1.5:1.0); and in delinquency rate (3.1:1.0).

Rural pupils outnumber urban pupils slightly in religious practice of pupils (1.15:1.00) but this could be attributed to the enforced religious observance of private schools, where there is an over-representation of rural pupils. No differences of any note were found in rural and urban rates of Maori race, eldest child, only child, religious practice of family, or family size. The only differences not explainable by geographic location would appear to be the greater father absence and delinquency rates of the urban pupils. But even father absence is probably explainable in that if the father leaves home, the family may move to town. In this and other ways the city may inherit country problems.

Numbers of Maoris and Non-Maoris in Socio-economic Categories and Parental Education Levels

Results of the frequency tallies of status levels for Maoris and Non-

Maoris are presented in Table E. XIII.

Non-Maoris are over-represented in the upper two SES levels (1.6:1.0) while Maoris are over-represented in the lower two SES levels (2.3:1.0). Non-Maoris are proportionately more numerous (2.1:1.0) in the upper two fathers education levels, and by a slightly greater ratio (2.3:1.0) in the upper two levels of mothers education.

Numbers of Maoris and Non-Maoris in Selected Life Categories

Results of analyses concerning other Maori-Non-Maori characteristics may be found in Table E. XIV. The proportion of males among Maori pupils is greater than among non-Maori (63.0% to 53.2%, or 1.2:1.0)

Maoris are over-represented in Intermediate school (64.2% to 52.4%, or 1.2:1.0); in those with mother employed (45.7% to 39.2%, or 1.2:1.0); in percentage of fathers deceased (9.9% to 4.5%, or 2.2:1.0); in fathers absent (8.64% to 4.55%, or 1.9:1.0); in delinquency (8.64% to 1.74%, or 5.0:1.0) and in rate of families of seven or more children (28.4% to 8.8%, or 3.2:1.0)

Non-Maoris are more likely than Maoris to have attended pre-school (38.25% to 23.86%, or 1.6:1.0) and to have a family of three children (24.81% to 12.75%, or 1.9:1.0).

To sum up, Maoris are distinguished by lower social class, lower parental education, more mother employment, more fathers absent and fathers deceased, more delinquency, larger families and less pre-school education.

Numbers in Social Classes falling into Selected Life Categories

In Table E. XV are found the results of frequency counts of the numbers of students in the six SES levels who are characterized by the descriptive life variables.

Pre-School Education was enjoyed by 36.6% of the total, but was strongly influenced by SES level. 51% of SES 1 and 23% of SES 6 attended pre-school, a ratio of 2.2:1. The decline through the SES levels is steady and marked, if it be remembered that SES 2, with 875 in toto includes 500 farmers' children who are less likely to have access to pre-school opportunities. Actual percentages from SES 1-6 are 51.0, 32.8, 45.0, 41.9, 31.9, 22.8. It is perfectly clear, therefore, that pre-school education serves the urban advantaged far more than the working class families.

Private Primary School Attendance, characterizing 27.5% of the total, follows an even more marked downward gradient than pre-school attendance through the social classes - 41.6, 31.5, 29.7, 19.4, 22.2, 12.2. The ratio of SES 1 to SES 6 is 3.4:1. The exception in the even gradient is the semi-skilled level, SES 5, which at 22.2% is higher than skilled trades

(19.4%), and well above unskilled. It may well be that this group is the one most influenced by the 17% Catholic school enrolment in the total. It was, indeed, the Catholic girls college which had the highest percentage in SES 5. This means, of course, that the disproportion in social class attendances at private schools would be much greater if the Catholic schools were not included.

Intermediate School Attendance is a predominantly city and working class matter. 53.8% of the total attended intermediate school, breaking down to 48.5, 33.0, 65.1, 76.2, 71.9 and 70.7, from SES 1 to SES 6. The rural influence at SES 2 is apparent. Half of upper class and three quarters of working classes attend intermediate schools.

Father Decease stands at 5.1% for the total but is far more common at the unskilled level. Actual percentages through the social classes are 3.5, 2.6, 8.1, 5.5, 7.6, 12.2. Unskilled are three and a half times more likely than professionals to record father deceased. Interesting differences occur at different occupational levels. Those in SES 3 (Clerical and shop assistants) have the second highest father decease rate, and are in a three to one ratio to SES 2 (managers, owners and farmers). SES levels 3-6 account for 72% of all father deceased cases, but only 49% of the total. Conversely, professionals, farmers, owners and managers, though comprising half the total, contribute less than one third of fathers deaths.

Father Absence stands at 5% for the total, but 4.9%, 1.8%, 4.3%, 5.5%, 10.5% and 12.3% in SES 1-6. While the highest tendency is clearly at unskilled and semi-skilled levels, it is notable that the rate for SES 1 jumps well above SES 2, in a 2.7:1 ratio. The greatest marital stability is at SES 2, the least at SES 6 and 5 and professional, clerical and trades are around average. One in four students in SES 6 has the father absent through either death or separation.

Maori Race by social class presents by no means a monotonic relationship. Rates are 11% of the total, 33% of unskilled, 19% of semi-skilled, 11% of skilled, 7% of clerical, 7% of farmers-owners-managers, and 10% of professionals. Thus Maoris are present in the expected numbers in professions and trades, are in almost twice the expected numbers in semi-skilled, swell to three times the expected numbers of unskilled, but are under-represented in business. This would suggest that Maoris are systematically excluded, in one way or another, from equal opportunity in the world of commerce, and that while this does not prevent the most able from attaining professional qualifications, it pushes a considerable sector of

Maoris into the working classes.

Religious Affiliation of Families is quite similar in extent for SES 1-5 (the range is 92% to 86%) but drops to 78% for SES 6.

Religious Practice of Families follows a general downward gradient through SES 1-6; figures give 57%, 43%, 46%, 35%, 36%, 24%.

Religious Practice of Pupils follows a still sharper downward gradient: 72%, 68%, 57%, 49%, 50%, 34%, from SES 1-6.

Delinquency is apparently in a curvilinear relation to social class. The rate for the total is 2.5%; that for SES 6 is 8.1%, for SES 5, 5.0%, for SES 4, 3.4%, while SES 3 and SES 2 have less than 1%, but SES 1 has 2.5%. Thus while delinquency is clearly associated with social disadvantage - though even this is questionable for the skilled level, SES 4 - it is slightly above the national average in the top SES level.

In summary, those of higher socio-economic level are much more likely to have pre-school education and to attend private schools, while those of lower socio-economic level are more likely to have attended Intermediate school, to have the father missing, to have an over-representation of Maoris, to be non-religious and to be delinquent.

Numbers of Delinquents in Selected Life Categories

The numbers of delinquents found in the descriptive life categories are recorded in Table E. XVI.

Delinquents are more likely to be male (66%), to be of urban residence (85%), to have attended a state primary school (83%) and to have attended Intermediate school (85%).

Compared with non-delinquents, delinquents are slightly less likely to have the mother employed (37% to 40%), more than twice as likely to have father deceased (11% to 5%), more than three times as likely to have the father absent from home (15% to 5%), nearly four times as likely to be Maori (39% to 11%), less likely to be in a family which practices religion (33% to 41%), less likely to practice religion himself (46% to 59%), twice as likely to come from the working classes (77% to 39%), more likely to have a father with no secondary education (22% to 15%) and a mother with no secondary education (19% to 11%), and more than twice as likely to come from a family with six or more children (44% to 19%).

In short, delinquency is compounded of male sex, urban environment, father absence, Maori race, irreligion, working class home, lower parental education and large families.

Pupil Perceptions of Parental Attitude to Academic Attainment

The question concerning parental attitude to academic attainment was:

If ever I came bottom of the class my parents would . . .

Answers were specified:

- (1) . . not mind at all.
- (2) . . be a bit sad and tell me to try harder.
- (3) . . be very angry and expect better results next time.

Results are presented in Table E. XVII. 4% gave answer (1), 74% answer (2), and 22% answer (3).

Differences between schools. With one exception the seven schools varied little on responses (1) and (2), but those differences apparently accumulated in response (3). Percentages rose from a low of 14% extreme parental attitudes for Solway, to 42% for St. Josephs. Other low rates were St. Matthews (15%) and St. Brides (16%). Near average rates were those of Rathkeale (20%), Wairarapa (19%) and Makora (24%). Among the private schools, St. Josephs stands out for a high rate of parental anger attitude toward academic failure. What makes it more remarkable is the relatively low rate of the Catholic girls school. It must be hypothesized that there are markedly different demand and control characteristics of Catholic homes toward the sexes.

Differences between sexes in general were not great, but boys, as might be expected, exceeded girls in the expectation of parental anger in response to failure (26% to 18%).

Delinquents are notable for only one thing in this regard - they record the highest rate of response (1) - "not mind at all" - (8%) - twice the average, but only a shade higher than SES 6 (7%).

Juniors and seniors did not differ in their perception of this parental attitude. Maoris likewise differed little from tendencies of the total. Urban rate was greater than rural for the extreme score (24% to 18%).

Socio-economic classes differed considerably. Highest parental anger response was for SES 1 (28%), lowest, SES 3 (17%), with SES 6 also relatively low (19%), while SES 6 also had the highest rate of parents not minding at all (7%).

Out of all of the sub-group tallies it is possible to conclude that parental attitude to failure as expressed in great anger is perceived most by Catholic boys and the professional class. Least angry attitudes are found in the responses from girls private schools and the unskilled class.

Pupil Perceptions of Parental Attitudes to Pupil Prospective Job Level

The item designed to assess mobility attitude of parents was:

My parents would like me to have . . and the responses were:

- (3) . . a better job than my father's
- (2) . . a similar job to my father's
- (3) . . do not mind which job I choose

Results of the frequency counts may be found in Table E. XVIII. The two state schools and the two boys schools ran close to the average of 27% responding in the most mobility-demanding way. The three girls schools ran a half to a third less than the boys schools. This is reflected in the male-female comparison for the high-mobility response (33% to 13%). Notwithstanding, the percentage of parents who "don't mind which job" runs nearly twice as high as the high-mobility response in boys schools and in all boys, while running from seven to nine times as high for girls schools. The strongest mobility demand is in St. Josephs, but the majority tendency is permissiveness in occupational choice. Since females as a whole run 6 to 1 low to high mobility attitude it appears that not too greatly increased mobility demand is to be found in the responses of state school girls than that already reported for private schools.

Delinquents are similar to average figures, as are also juniors and seniors.

Marked differences are found in social classes. SES 1, since it involves fathers at professional levels, understandably rates only 8.5% mobility responses. Highest mobility responses are recorded for SES 6 (37%) and SES 5 (30%). It remains true, however, that in all six SES levels, about two in three pupils perceive their parents as "not minding at all" what job they have.

Maori rates, and urban and rural rates are close to the total rates.

It appears then that male sex and family frustration with unfulfilled parental aspirations lie behind perceived parental mobility demands.

Pupil Perceptions of Parental Attitudes to Pupil Smoking

The item selected to elicit the pupils perception of the parents' attitude to smoking was: My parents . .

- (1) . . allow me to smoke if I want to
- (2) . . don't mind if I smoke
- (3) . . will not allow me to smoke

Results are presented in Table E. XIX. Overall response is that 57% of parents forbid smoking, 18% "don't mind", and 25% allow smoking.

Broken down into sexes, there is some tendency for girls (63%) to be forbidden more than boys (52%). The highest rates of forbidding are in juniors and Solway (71% each). Lowest rates of forbidding are for seniors (40%), delinquents (47%) and the two private boys schools, Rathkeale (47%) and St. Josephs (48%).

Considering rates of permission to smoke, the lowest are for girls private schools (St. Brides, 15%; Solway, 18%) and for juniors (14%). Highest rates of permission are for seniors (37%) and lowest social class (31%).

Viewed overall, those least allowed to smoke are private school girls, and juniors, while those most allowed to smoke are seniors, delinquents and lowest social class.

Pupil Perception of Parental Expectations that Pupils do Household Chores

The item I used to assess the parents' attitude to pupil-chores was: Do your parents expect you to do jobs around the house? . . and the response categories were:

- (3) I do jobs regularly several times a week.
- (2) I do jobs occasionally - not every week.
- (1) I do jobs very rarely.

Results may be found in Table E. XX. Overall rates were 69% regular, 24% occasionally, and 3% rarely.

Girls surpassed boys in the 'regularly' class, 78% to 61%. St. Brides has the highest school rating for regularly (82%), and Rathkeale the lowest (54%). Rural pupils had regular chores in slightly more cases than urban (72% to 67%). The highest rate for 'rarely' was for Maoris (7%), with lowest SES 6%, and at the other extreme St. Josephs (1%).

In brief, it appears that almost all homes expect chores, but higher demands are for girls, pupils of private Catholic schools and rural pupils.

Pupil Perceptions of How Often they Go Out with their Parents.

The item asked: How often do you go out with your parents, say to a film, go to church, visit a friend or relative? . . Responses were:

- (3) At least once a month
- (2) Occasionally
- (1) Only rarely or never

Results may be found in Table E. XXI. The 'regularly' response was given by 40% of the total. Higher rates of 'regularly' responses among schools came from Rathkeale (46%), St. Josephs (53%), St. Brides (49%) and Solway (51%), while the two state schools rated much lower (Makora 31%; Wairarapa 35%).

Among social classes, the rates descended evenly from SES 1 to SES 6: 46%, 45%, 42%, 37%, 32%, 20%.

Delinquents record the lowest rate of going out with parents regularly (26%), with Maoris also low at 30%.

Thus the groups least likely to go out regularly with their parents are state school pupils, lower social class, delinquents and Maoris. Similarly, those most likely to say they rarely or never go out with their parents are lower social class (26%), delinquents (23%) and Makora students (20%). The lowest rate in this response is that of SES 1 (7.5%).

Numbers of Pupils in Social Categories Perceiving Higher and Lower Family Warmth

The item eliciting students' perceptions of family warmth was:

My family life is:

- (5) Very warm with frequent affectionate actions and words
- (4) Warmer than most, with occasional words of love and acts of affection
- (3) Average in warmth, with a steady friendliness but little outward affection
- (2) More often unfriendly than friendly, with more unpleasant than pleasant times
- (1) Nearly always unpleasant and unfriendly

Responses were grouped into three categories - higher warmth, average warmth, lower warmth. Results of the tallies are presented in Table E. XXII.

The overall response indicated 55% higher warmth, 42% average and 4% lower.

Among the schools, Makora rated the smallest percentage of higher ratings (44%), with Wairarapa next at 51%. Private schools all gained quite considerably more high warmth responses than did the state schools: in order they are Rathkeale 67%, Solway 65%, St. Josephs and St. Matthews (62%), St. Brides (58%). Correspondingly, the highest percent of lower warmth responses occurred at Makora and Wairarapa (both 6%). In real numbers, 80 pupils see their family life as usually or nearly always unpleasant, and a further 861 see it as steady but with little outward affection. If indeed the need for love is the prime human need beyond survival, then these results suggest that up to half the adolescents are relatively deprived.

The 'deprivation' is greatest among delinquents, of whom 40% rate their families as of higher warmth; and among the working classes: SES 6 rates 40%, SES 2, 45%, SES 3, 47%. Likewise the groups most likely to rate their family life unpleasant and unfriendly are delinquents (13%), SES 6 (11%), SES 5 (9%) and SES 4 (8%).

The "warmest" families are those of highest SES and those who send their children to private schools.

In conclusion, an implication of much more pleasant family life in privileged classes is given, and there is a clear indictment of the parents of delinquents and of unskilled workers. It remains true, however, that even among these materially 'deprived' children, over 80% rate their families as being at least steady in friendliness, and 40% of them higher in warmth.

Numbers of Pupils in Social Categories Perceiving Higher and Lower Levels of Positive Family Climate

The scores on the family warmth and respect scales were summed to form

a Positive Family Climate score. Scores were grouped into quartile score-ranges on the basis of the actual range of raw scores, and the number of pupils scoring in each quartile counted.

Table E. XXIII records the results of frequency tallies of students from different social groups in the quartile ranges.

The percent of selected groups falling in the lower half of the score range is: Delinquents 70%, SES 6, 60%, Total, 45%, St. Matthews, 40%, SES 1, 38%, Solway, 28%, Rathkeale, 28%.

It is not necessary to labour the obvious. The deficit is among delinquents and the unskilled homes; the better conditions are reported in the privileged homes. The baseline for the total population serves to show that delinquents are much more likely than the average to fall in the lower quartile of positive family climate (49% to 28%) and more than twice as likely as SES 1 (49% to 21%). Correspondingly, SES 1 are much more likely to fall in the upper quartile (30%) than are Makora (22%), Wairarapa (20%), delinquents (17%) or SES 6 (15%).

It is clear, then, that lower levels of family climate are linked with delinquency and with working class homes.

Numbers of Pupils in Social Categories Expressing Negative, Neutral and Positive Attitudes to Teachers.

The assessment of pupils' attitude to teachers was obtained by rating as negative, neutral or positive the pupil's response to the sentence-completion stem: Teachers in this school are . . .

In the total data there were 8% negative, 26% neutral and 66% positive. Results in terms of numbers of students in the seven schools giving the three kinds of response may be found in Table E. XXIV.

The two state schools were virtually right on the average. But the private schools differed markedly. From greatest to least percent giving positive responses, they are: 2 Catholic schools, 79% each; Rathkeale, 70%; St. Matthews, 69%; Solway 56%.

In terms of negative responses, the order is: Solway, 12%; Wairarapa, 10%; Rathkeale and St. Matthews, 9%; St. Josephs, 6%; Makora, 6%; St. Brides, 5%.

Table E. XXV presents the results for other social groups. Of the social classes, SES 6 has the most negative responses (12%) and least positive (52%). But delinquents rate most negative to teachers (26% negative, 26% positive). In comparative terms, non-delinquents are almost three times as likely as delinquents to make positive statements about teachers.

Results point, as may be expected, to greater antipathy in deprived and delinquent pupils; they also indicate that quite wide differences can occur in private schools.

Numbers of Pupils in Selected Categories with Ratings of Primary School Reading

Previous academic attainment was assessed in terms of the official 1-5 rating of primary school reading as found in the secondary school records. The ratings are supposed to be normally distributed through the 5 levels, 1 being excellent and 5 very poor.

Results are presented in Table E. XXVI. The baseline for total data is 1 - 6%; 2 - 29%; 3 - 50%; 4 - 13%; 5 - 2%.

Above average ratings (1 and 2), ordered from highest to least rates, were found as follows: Solway, 55%; SES 1, 49%; Seniors, 40%; Females, 39%; Rathkeale, 38%; Wairarapa, 37%; St. Brides, SES, 2, SES 3, 36%; Urban, 35%; Rural, 34%; SES 3, 33%; Makora, Males, St. Josephs, Juniors, 31%; SES 5, 28%; SES 6, 26%; St. Matthews, 25%; Maoris, 18%; Delinquents, 17%.

The results stand as presumptive evidence for reading deprivation in delinquents, Maoris and lower social classes; and for advantage in highest social class, seniors, one private school, and females. The heredity factor cannot be evaluated, but the environment factor is clearly implied, both in reading attainment and in the consequent causation and perpetuation of individual disadvantage and maladjustment. Low ratings, 4-5, it may be noted, were gained by 30% of delinquents, 30% of SES 1, 28% of Maoris and only 9% of SES 1.

Numbers of Pupils in Selected Categories with Ratings of Primary School Arithmetic

The same procedure as in the case of primary school reading was followed in order to obtain an assessment of earlier arithmetic attainment.

Reference to Table E. XXVII will show that for the total sample the distribution of arithmetic attainment is 28% high (1-2), 53% average (3), and 18% low (4-5). Higher than expected rates of high arithmetic attainment were found at Rathkeale and Solway schools (37% and 41%), and in SES 1 (36%). Lower rates of high arithmetic attainment than expected were found at St. Matthews (19%) and in the Delinquent (13%) and Maori (13%) groups. The downward slope of rates of higher arithmetic attainment through the SES levels is almost uninterrupted (36%, 31%, 29%, 23%, 21%, 23%). These differences are reflected, of course, in higher than expected rates of low primary school arithmetic attainment for Maoris (36%) and delinquents (45%). While a general increase in rates of low scores from 12% to 27% is found

from SES 1 to SES 6, there is one marked anomaly, SES 4 having twice the rate of SES 3 (29% to 14%) and higher than any other. It is notable too that St. Brides, with 25% low arithmetic levels exceeds every other school in this regard. Males as compared with females have more low levels of primary school arithmetic (20% to 16%).

To sum up, primary school arithmetic attainment appears to be greatest in top SES, but not necessarily at private schools. Lowest arithmetic attainment is more likely in the history of delinquents and Maoris, and to a lesser degree in the skilled trades and unskilled classes.

Numbers of Pupils in Selected Categories with School Perseverance Ratings

The 1-5 (good to poor) perseverance rating of all pupils was obtained from school records. Table E XXVIII presents the results for the social groups, with scores compressed to form low (4-5), average (3) and high (1-2) perseverance levels.

Overall rates were 16% low, 39% average, and 45% high. A marked difference in the two state schools is evident in the proportion of high ratings accorded (Makora 66%, Wairarapa 26%). Other high rates occur in St. Matthews (81%), Solway (64%), females (53%) and SES 1 (52%).

Apart from school differences, the obvious distinctions are the lower rates of high perseverance for males (39%), for SES 6 and SES 5 (both 36%), Maoris (38%), males (39%) and delinquents (26%).

The fact that individual schools rate at markedly different levels suggests that no standard meaning can be given to the perseverance ratings. It seems fair to assume, however, that the tendencies to lower ratings in males, lower SES, Maoris and delinquents are general throughout the schools.

Numbers of Pupils in Selected Categories Enjoying English Classes

Enjoyment of a subject class was assessed by having students check one of five specified levels of feelings about that class, in the form:

I like it . . very much, pretty much, average, dislike it, hate it.

Results of response rates for English class compressed to low (hate or dislike it), average, and high (like it pretty much or very much) are found in Table E. XXIX.

The total rates were 8% low, 39% average, 53% high. Higher rates of high responses than expected were found at Rathkeale, (62%), Solway (62%), and in SES 1 (65%). Lower rates of positive responses were recorded for Makora (45%), delinquents (43%) and SES 6 (45%).

Higher rates of 'hate or dislike' than expected occurred in Makora, (14%), delinquents (19%) and SES 6 (17%).

These results present a clear association of dislike of English classes with social disadvantage and delinquency.

Numbers of Pupils in Selected Categories Enjoying Mathematics Classes

Results of the ratings for enjoyment of Mathematics classes are found in Table E. XXX.

The overall rates were markedly more negative than for English classes, with 30% low, 36% average and 34% high. Both state schools fell close to overall figures. Greater than expected rates of high scorers occurred at the two boys private schools (Rathkeale, 41%; St. Josephs, 44%) and in Maoris (44%) and in SES 1 (43%). Males exceeded females in rates of high scorers (39% to 28%), and juniors exceeded seniors (39% to 29%). Lowest rates of high scorers for the schools were in two girls private schools. Apart from SES 1, the social classes were quite even, at 32-33%, in high enjoyment. Rates of 'hate or dislike' scores were high at the three girls private schools (St. Matthews 41%; St. Brides 46%; Solway 63%). In contrast, St. Josephs has 17% at this level. Girls as a whole exceed boys in the hate or dislike feeling (38% to 22%). The Solway rate for 'hate or dislike' mathematics is the more remarkable when it is recalled that it exactly matches their rate of positive feelings for English class.

In sum, there is a marked sex difference in enjoyment of mathematics classes, much of the negative affect coming from girls in private schools. There is also a clearly greater enjoyment of mathematics class by students of SES 1 than other social classes.

Numbers of Pupils in Selected Social Categories Enjoying Social Studies Classes

Results of the ratings for enjoyment of Social Studies classes are given in Table E. XXXI.

The overall rates were - low 8%, average 32%, high 60%, clearly the most enjoyed subject area. Higher than expected rates of positive responses occurred at Makora (69%) and in SES 1 (69%). The only relatively low rate of high enjoyment was for delinquents (45%). Higher rates of low enjoyment characterized delinquents (19%), St. Brides (13%) and SES 6 (11%).

The picture is not clear, but it appears that upper social class and enjoyment of social studies go together, while delinquents enjoy it much less, and individual schools carry it out in ways which cause general feelings of a more positive or negative nature.

Numbers of Pupils in Selected Categories Enjoying Science Classes

Results of the ratings for enjoyment of Science classes are presented in Table E. XXXII.

The overall rates were - low 18%, average 35%, high 47%, which is somewhat more positive than for mathematics.

Not a great deal of difference was evident, but what there was favoured SES 1 (59% high, 13% low), males (53% high, 16% low), and Makora (53% high, 14% low). The least positive feelings were in delinquents (34% high, 28% low), and in St. Brides (33% high, 24% low).

The results support a view that, like mathematics classes, science classes are enjoyed more by upper social classes and males. School differences are in part sex differences, but it appears that as with social studies, Makora approaches science in a way that promotes greater pupil enjoyment. The delinquents are again at the negative end of the attitude continuum.

Numbers of Pupils making Negative, Neutral and Positive Responses to the Sentence Completion Stem "Teachers in this school think of me as"

Judgments on responses to this sentence completion stem may be found in Table E. XXXIII.

The overall distribution of responses is 17% negative, 53% neutral and 30% positive. The only markedly positive pattern, relative to the average, is in Makora (37% positive, 15% negative). Solway (22% positive, 30% negative) and delinquents (17% positive, 30% negative) had the least positive perception of teachers' view of them. In addition, St. Matthews had a rather high rate of negative responses (24%).

In all, the more positive pattern was found in the newer state school, while delinquents had the least positive pattern, and a tendency to less positive perceptions was present in the non-Catholic girls schools. In contrast with most other affective traits, no social class differences were apparent.

Numbers of Pupils Perceiving Opportunity

Assessment of the degree to which a pupil perceived his situation as one of good opportunity was carried out by use of the Srole Scale as adapted by Vellekoop.

Group rates of scores in the four quartiles are reported in Table E. XXIV.

The distribution of total scores was: 1st quartile - 24%; 2nd quartile - 28%; 3rd quartile - 26%; fourth quartile - 23%.

Higher than average patterns were found in Makora (32% upper quartile, 18% lower quartile), in St. Matthews (29% upper, 20% lower) and St. Brides (30% upper, 19% lower).

Highest rates of lower quartile perceptions of opportunity were found in Rathkeale, Delinquents, Maoris, rural, and SES 6.

The picture is rather complex. The fact that one state school has such a higher rate of upper quartile scores than the other (32% to 16%) indicates

a different learning experience as regards the possibility of occupational success. Which is the more realistic is difficult to say. On face of it, it seems more reasonable that 32% than 16% should have high expectation of success as inferred from perception of opportunity.

From the relatively low scores of Rathkeale and high scores of St. Matthews and St. Brides it might be conjectured that for boys of materially well-off families, it is more difficult to expect much opportunity to do well as compared with what they already see in their families; while for the private school girls there is more scope for free expression of their interests.

Lower expectation of opportunities on the part of delinquents, Maoris and SES 6 is part of the syndrome of socially learned depressed perceptions, affect, attitudes and performance.

The fact that rural students perceive less opportunity can probably be attributed to their lesser experience of urban life.

Numbers of Pupils Assenting to Conservative Christian Beliefs

The questionnaire developed by this author and R.A.C. Stewart, The Theological Conservatism Scale, was reduced from 12 to 5 items for this study, the items being highly loaded on the factor and representing major facets of traditional belief. The items were:

Christ changed real water into real wine
The dead body of Jesus came alive again
There is a hell, with everlasting suffering after death for unbelievers
Christ will return to earth in physical form
God interrupts natural laws sometimes

Response categories were:

Believe it very strongly
Believe it quite strongly
Doubt it
Don't believe it

Results are in Table E. XXXV. Distribution of scores in quartiles was: lower - 27%; second - 24%; third - 25%; upper - 24%.

By far the highest rates of upper quartile scores were gained by the two Catholic schools (St. Josephs, 67%; St. Brides, 54%). Lowest rates of upper quartile scores for schools were found at Makora (15%), Wairarapa (18%), Rathkeale (18%), and Solway (12%). Among social groups other than schools only SES 6 (19%) had a low rate near that of these four schools.

In fact, the average figures mask the fact of very large differences between Catholic and non-Catholic schools, fewer than 20% of the latter being in the highly assenting quartile, while in the Catholic schools the rate is over 60%.

Viewed in terms of disbelief, the rates are in some ways more informative. Since the scoring is such that a student answering 'Don't believe it' for

each item would score a total of 5, and a straight 'Doubt it' scores 10, it is obvious that the first quartile represents virtually complete rejection of the beliefs, and the lower 50% disbelief and doubt. Since the distribution is skewed to the right, however, the observations in the first and second quartile include more low scores. Therefore the first two quartiles represent somewhat stronger rejection of the beliefs than do the lower two response options. Accordingly, the rates of scores in the first and second quartiles are to be regarded as tending quite strongly to disbelief.

In these terms, the differences between sub-groups are the more dramatic. Considering the first quartile only; as against 1% disbelief at St. Josephs, and 2% at St. Brides, the ascending figures are: Solway, 19%; St. Matthews, 21%; females, 23%; Juniors and Maoris, 24%; SES 1, 2, 3, 5, 25%; Urban and SES 4, 27%; Wairarapa 29%; Males and Seniors, 30%; Rathkeale, 32%; Makora, 37%; Delinquents, 38%; SES 6, 40%. To put it in extreme terms, there is a 40:1 greater probability that unskilled class pupils will reject conservative Christian beliefs than in the St. Josephs boys. Apart from the church difference so observed, there is somewhat of a tendency for females, juniors and Maoris to assent more to these beliefs.

Numbers of Pupils Scoring at Four Levels of Happiness

Assessment of the student's subjective sense of happiness was made in responses to the Hoppock Happiness Scale^{Smith, 1961, p. 21}. The 16 items are in four categories, of which the first and last in each set are:

- A. I am very dissatisfied and unhappy
I am very satisfied and happy
- B. I am seldom happy
I am happy most of the time
- C. I am much less happy than the average pupil
I am very much happier than the average pupil
- D. My life has been very unpleasant
My life has been very pleasant and enjoyable

Scores in the four categories are summed to a possible of 16. Results, in quartiles, are reported in Table E. XXXVI.

The quartile distribution is: lower - 23%; second - 32%; third - 17%; upper - 28%. The irregularity in the distribution represents the fact that it is metric quartiles of the possible range which are employed as categories.

Very little variation was found, but what there was is important. The unhappiest students by far are the delinquents, with 13% in the upper quartile and 37% in the lower quartile. The only other noticeably less happy group is SES 6 (21% in upper quartile, 33% lower). The next highest rate of lower quartile scores is for Maoris (27%).

The happiest groups were Rathkeale (31% upper, 19% lower quartile) and

rural students (30% upper, 21% lower). These differ little, however, from the general tendency. Apart from the materially disadvantaged and delinquent, there are no social categories which as such represent independent variables affecting or related to happiness. There is, however, a general tendency for about one in five or one in four to see himself as seriously unhappy. In the following chapter, it will be seen that this perception is related to school experiences and thus may be seen as contingent on the needs-press impact of the school environment for the individual. That this should weigh most heavily on the delinquent and the disadvantaged is not surprising.

This chapter has presented group differences within the school population on characteristics relevant to opportunity, success and enjoyment in school. The results may be broadly summed up in terms of general advantage or disadvantage associated with social class indices. These indices will be considered to include SES, parental education and private school attendance. It must be remembered, however, that upper SES is by no means a prerogative of pupils of exclusive schools. Of all the upper SES students in the study, fewer than half attend the private, non-Catholic schools. Thus statements about upper SES are not the same thing as statements about private schools.

Indices of higher social class are associated with more pre-school education, more private school education, less mother employment, less father absence, greater continuance at school, less Maori numbers, more religion, less delinquency, more parental pressure to succeed in school, less mobility pressure, more parental control as regards smoking and chores, more regular going out with parents, greater family warmth, more positive family climate, more positive attitudes to teachers, higher primary school ratings of reading and arithmetic and higher enjoyment of English, Mathematics, Social Studies and Science. Special disadvantages affecting Maoris, delinquents and those of SES 6 are lower parental education, greater father absence, large families, less parental concern about failure, more permission (and pressure) to smoke, less family outings, less parental warmth, deficient family climate, more negative attitudes to teachers, lower primary school reading level, lower primary school arithmetic level, lower perseverance ratings, less enjoyment of English, Mathematics, Social Studies and Science, lower view of how teachers regard them, lower expectation of opportunity, lowest religious belief, and lowest self-reported happiness.

These figures can leave no doubt that disadvantage exists in the schools and that 'equality of educational opportunity' is merely the official

term to describe the fact that there is no official policy to provide special opportunity for anyone other than the markedly deviant. Because of this it can be expected that the home environment will be found to exert a disproportionate effect upon educational outcomes. Succeeding chapters contain the results of the attempt to specify the amount of influence exerted by specific factors on dominant intellectual and non-intellectual outcomes in the students.

Chapter 8

FACTORS IN PUPIL CHARACTERISTICS

The purpose of this chapter is the presentation of results of the factorial definitions of outcomes of the educational process, both formal and informal. Variables of intellectual and of non-intellectual nature were submitted to factor analysis in order to identify major dimensions, with a view also to selecting "best indicators" of those dimensions for use as dependent variables in regression analyses. In order to control for systematic effects of structural and functional differences, separate analyses were done for sexes, ability groups and age levels. Analyses were taken as far as oblique rotations in each case and except in one instance, the oblique solution was accepted.

One query against the results is that arising from the limitation on the programme to the extraction of ten factors. It must be reported here, however, that the print-out provided a complete list of characteristic roots and cumulative percent of trace thus making it possible to check on the strength of the factors beyond ten which might have been extracted. This issue affects Table F.XLIV, which could have been extended to four more factors, with an average of about 2½% of trace in each; Table F.XLVI, with five more factors of about 2% average value; Table F.XLVII, with five more factors of about 2% average value; Table F.XLVIII, with four more factors of about 2% average value; Table F.XL, with five more factors of less than 2% average value; and Table F.I, with three more factors of less than 2% average value. Inspection of the communalities coefficients in these tables indicates that on the whole the variables loading most highly on the factors have the higher proportions of variance extracted by the factors. This would indicate that little change in factor structure would occur if the few small additional factors were extracted. The percent of total variance extracted in the solutions reported is of a useable level, but not high. This no doubt reflects two things: the presence of a large number of variables some of which are relatively experimental and of untested measurement characteristics; and the fact that it is virtually impossible to get full attention and equally conscientious effort from over 2,000 adolescents for such a battery of tests and questionnaires. The presence of unknown contaminating factors of misunderstanding of

instructions, of changeable situational pressures and the like help to contribute to measurement error and to less validity, thus making it less possible to find clear factor solutions. Nevertheless, the major instruments and most of the special questionnaires appear to have extracted consistent and conceptually meaningful data as indicated by correlations and by factors. In a sense, it has been a 'saturation' method: in order to maximize the likelihood of obtaining the basic structure of a domain, a number of variables conceptually representing similar constructs are used, and the factor analysis organizes them into sets with a common dimension and provides a coefficient which answers the question: Which of these variables is the best indicator of the factor?

The Intellectual Factors

Results of the factor analyses of intellectual variables are found in Appendix F.

Table F.XLI presents the oblique primary factor loadings for intellectual variables using data for all males, in the study. A summary of the factors is given below, in Table 8.

Table 8: Summary of Oblique Primary Factors of
Intellectual Variables for Males.
N = 1123

Factor I:	<u>Attainment</u>	42.18%
AA	Attainment Average	-.974
SA	Science Attainment	-.836
MA	Mathematics Attainment	-.804
SSA	Social Studies Attainment	-.803
EA	English Attainment	-.773
PVR	Perseverance Rating	-.635
Factor II:	<u>Aptitude</u>	12.53%
DAL	Language Usage	-.854
DAN	Numerical Reasoning	-.792
DAV	Verbal Reasoning	-.749
DAA	Abstract Reasoning	-.724
Factor III:	<u>Religious Belief</u>	8.65%
RLB	Religious Belief	-.748
PO	Perception of Opportunity	-.676

Attainment and aptitude appear as separate factors. The correlation between factors I and II, ($r = .47$) indicates sufficient overlap to allow for the known influence of aptitude on attainment.

But the degree of relationship is limited and attainment and aptitude may be conceived, at least so far as aptitude test scores and regular school exam marks are concerned, as at least 80% independent from each other. One implication is that the actual performance of pupils is not a direct expression of basic aptitude, or functional intellectual equipment. Another is that the schools are examining and grading academic performance in some way such that they do not tap or sample aptitude as such to any but a minor degree. The reasoning behind this is simply that the schools are committed to teaching each child to the fullest of his potential. If aptitude scores are valid then they are a fair criterion of potential - in fact a minimal one. The emergence of a separate attainment factor from the aptitude factor, while not being evidence of failure of the schools - for it could just as logically arise from the success of the schools in extending pupils beyond their previous ability - certainly raises the question as to the factors which account for the large proportion of attainment which varies independently of measured aptitude. The strong loading of the Perseverance Rating on the Attainment factor suggests that a personality effect is prominent.

The inclusion of religious belief and of perception of opportunity as cognitive variables was quite deliberate, in view of the research evidence (Brown, 1966) that religious belief constitutes one's cognitive organization of the nature of the real world. Likewise, perception of opportunity may be viewed as a set of beliefs about one's environment. The religious belief factor must be viewed with caution, however, since the correlation matrix shows that the components are scarcely correlated in a univariate analysis. Examination of the factor solutions for the other sub-groups is called for at this point, to check on the generality of the male factors throughout the adolescent population studied.

Results of the factor analysis of intellectual variables for females may be found in Table F.XLII. A summary of the factors is in Table 9.

Table 9: Summary of Oblique Primary Factors of Intellective Variables for Females N = 949			
Factor I:	<u>Attainment</u>	47.14%	
AA	Attainment Average		-.991
SA	Science Attainment		-.915

contd....

Table 9: Factor I contd.

SSA	Social Studies Attainment	-.900
MA	Mathematics Attainment	-.891
EA	English Attainment	-.786
PUR	Perseverance Rating	-.327
Factor II:	<u>Aptitude</u>	11.23%
DAV	Verbal Reasoning	-.872
DAL	Language Usage	-.866
DAN	Numerical Reasoning	-.784
DAA	Abstract Reasoning	-.715
Factor III:	<u>Religious Belief</u>	8.66%
RLB	Religious Belief	-.900
PO	Perception of Opportunity	.420
PUR	Perseverance Rating	-.317

The factors are almost identical with those for males.

Religious belief is opposed to a perseverance-perception of opportunity amalgam. It is suggested thereby that conservative belief in females is part of a pattern in which perseverance and optimism are depressed. The fact that perseverance is loaded in similar strength on the attainment factor points to the complexity of the PVR rating. Its membership in the attainment factor arises from the fact that teachers assign a higher rating on perseverance to those who attain better; the rating therefore denotes application and intellectual energy. But there is an influence of a larger belief system or cosmogony in which work is a value, cutting obliquely through the performance dimension. It is this which is reflected in factor three as a facet of the organized system of beliefs with which it is associated. It remains a fact, however, that the religious belief factor is constructed differently for males and females. In males it involves heightened perception of opportunity; in females it discourages it.

It must be recognized, however, in spite of the complexity of the religious belief factor and the amount of discussion thus necessitated, that it is nowhere near as important as the attainment and aptitude factors, representing only about one seventh of the geometric space occupied by the three. The correlation between the aptitude and attainment factors ($r = .58$) indicates that attainment is more directly influenced by aptitude in females than in males.

there being 33% redundancy for the two in females as compared with 22% in males.

In order to test simultaneously the stability of the factors and the possibility that the presence of a related variable was influencing the linear functions, a further factor analysis was carried out, using both male and female data and omitting the Attainment Average (AA) variable. (In both males and females, AA correlated highly ($r > .80$) with each of the attainment variables from which it was derived.) The result of the analysis is presented in Table F.XLIII.

The attainment and aptitude factors are confirmed as not being dependent on the influence of the AA variable. The religious belief factor does not persist in the combined male-female data, a fact which would be consistent with the view given above, that it has different structure for males and females, and therefore would be confounded in joint data.

Separate analyses of the intellectual variables for juniors and seniors are reported in Tables F.XLIV and F.XLV. Only the two major factors - attainment and aptitude - were extracted from the data on juniors, thus confirming the basic structure of the academic variables. Perseverance loaded again on the attainment factor, indicating that the teacher is rating application to the task. Religious belief, being loaded at moderate level in both attainment and aptitude factors is confirmed as a component of cognitive function not distinguished as a structured whole as the separate male and female analyses showed. It must be concluded, therefore, that the male and female analyses disguised the fact that for juniors religious belief does not exist as a separate factor of intellectual content and function.

Table F.XLV breaks new ground as it includes with the academic scores and the perseverance, perception of opportunity and religious belief scores the 30 scales of the Future World Orientation questionnaire (FWO). A summary of the factors is given below in Table 10.

Table 10: Summary of Oblique Primary Factors of
Intellectual Variables for Seniors
N - 939

Factor I:	<u>Attainment</u>	13.64%
AA	Attainment Average	-.979
SA	Science Attainment	-.874
SSA	Social Studies Attainment	-.852
MA	Mathematics Attainment	-.841
EA	English Attainment	-.790
PVR	Perseverance Rating	-.446

Table 10: contd....

Factor II:	<u>Expectation of War</u>	6.31%
Q3	War between races	.711
Q2	War between rich and poor	.711
Q1	War between capitalist and socialist	.687
C	Change toward interiority	.429
Factor III:	<u>Social Breakdown</u>	5.32%
D	Family breakdown	-.710
G	Mental health breakdown	-.610
E	Greater leisure	-.548
F	Homogenization of society	-.513
Factor IV:	<u>Academic Aptitude</u>	4.70%
DAA	Abstract reasoning	-.813
DAN	Numerical reasoning	-.812
DAL	Language usage	-.794
DAV	Verbal reasoning	-.650
Factor V:	<u>Conservative Religion</u>	4.17%
RLB	Religious belief	.732
P1	Peace through changed persons	.698
J	Hope for non-breakdown of family	.605
I	Hope for interiority	.523
L	Hope for more urbanization	-.377
Factor VI:	<u>Peace Through Economic and Military Measures</u>	3.60%
P2	Peace through abolition of inequality	.721
P3	Peace through military strength	.565
P4	Peace through non-aggressive co-operation	.328
Factor VII:	<u>Rejection of Male Adult Leadership</u>	3.14%
H	Change from adult male leadership	.756
K	Hope for change from male adult leadership	.710
Factor VIII:	<u>Personal Activism for Peace</u>	2.91%
P5	Self-role in peace realization	.728
R	Activism - optimism	.511
Factor IX:	<u>Use of Nuclear Weapons and Scientific Control</u>	2.73%
O6	No justification for non-nuclear war	-.634
N	Disapproval of scientific control	-.609

contd....

Table 10: Factor IX contd.....

07	No justification for nuclear war	-.543
M	Disbelief in scientific control	-.506
05	Inevitability of war	-.324
Factor X:	<u>Optimism</u>	2.68%
B	Self-world optimism	.649
P0	Perception of opportunity	.642
02	N.Z. escape war damage	.396
04	Big power starts war	.309

Examination of the ten factors suggests first the general view that the strategy of placing academic variables within a larger matrix of social and global perceptions provides a 'cognitive context', within which the importance and the nature of the traditional intellectual variables can be better understood.

Secondly, it is notable that the integrity of the attainment and aptitude factors remained undisturbed. This is not to say that there were no relationships between the academic variables. Indeed aptitude scores correlated $r \geq .20$ with more hope for interiority, more hope for non-breakdown of the family, less belief in scientific control, more expectation that New Zealand would be involved in a third world war, and more activism - optimism. Likewise greater attainment is correlated ($r = .22$) with activism - optimism. Thus a generally more constructive outlook appears to go with greater intellectual strength. But these one-way relationships are not sustained in correlations of factors. In fact the only noteworthy correlations between factors are those between I and IV (attainment and aptitude; $r = .42$), between IV and V (aptitude and conservative religion; $r = -.25$), and between II and IX (expectation of war and use of nuclear weapons; $r = .35$).

The order of size (and statistical importance) of the factors call for attention. The first four factors make sense as major dimensions of modern adolescents' knowledge and ability. Attainment is of greatest importance, but expectations about global war and about social breakdown are together practically as significant as academic attainment. Academic aptitude, though important in the sense of administrative and educational utility, is not as important in the adolescent's intellectual organization as the perspectives on international and national viability. This finding

would support a view that education ought to give great attention not only to the traditional disciplines as represented in the attainment factor but also to understanding of the future and an ability to work constructively through the problems represented by the 'expectation of war' and 'racial breakdown' factors. This point will be discussed again following an overview of the factors.

A brief overview is now offered, on the nature and meaning of each factor.

Factor I: - Attainment - indicates that a general ability factor underlies attainment in the separate core subject areas. It is rather more loaded on science than on English; but as a whole it is consistent with Spearman's "g" factor and the Hundleby and Cattell (1968) general intellectual competence factor.

Factor II: - Expectation of War - comprises a general expectation of war, with no discrimination between different major potential causes of war. Accompanying the expectation of war is the expectation that people will become more concerned with matters of the inner life. Thus the pattern of expectation of war goes with a notion of a kind of privatism or value preoccupation.

Factor III: - Social Breakdown - has as its main components family breakdown and mental health breakdown. A clear delineation of the future of domestic society, as opposed to international affairs in Factor II, is presented in this factor. The association of family and mental health in the adolescent's mind is noteworthy as a reflection of the concept that the former is the context and condition of the latter.

It is in connection with social change that the social breakdown is conceived, greater leisure and a tendency for people to become more like each other in the future being the accompanying features of the breakdown. It seems possible, therefore, that the adolescent is expressing in this factor some sense that mass society in which people lose their distinctiveness as individuals is a contributing factor in social breakdown.

Factor IV: - Academic Aptitude - requires no comment, since it emerges clearly as in the previous analysis as a general aptitude factor, indicating that the artificially distinguished facets of formal learning are highly interdependent.

Factor V: - Conservative Religion - is a factor in which assent to a set of traditional, highly supernaturalistic theological statements is associated with a hope to see men's hearts changed and the

virtues of family life and reflective living maintained. A somewhat protective element is present, leading to a relationship of these ideas with a resistance to urbanization.

Factor VI: - Peace through Economic and Military Measures - incorporates the economic and co-operative measures of international alignments backed up by military strength. A confused and compromising policy is involved in the factor.

Factor VII: - Rejection of Male Adult Leadership - comprises only the scale expressing a belief that there will be much more leadership by women and youth in the year 2,000, and the scale expressing the hope that there will be more women in adult leadership. It is noteworthy that the factor is so simple. There are apparently no general patterns including, say, women's liberation with greater intelligence. But it is to be recalled that the data come from both male and female seniors, and it is thus possible that a peculiarly feminine pattern is being concealed in this analysis. Nevertheless, in a complete male and female population the factor stands unrelated to other variables.

Factor VIII: - Personal Activism for Peace - is composed of the 'self role in peace realization' scale, (which incorporates the belief that oneself can do something to implement his proposal as to how to bring about peace, and the belief that the proposal can be realized by the year 2,000) and the activism - optimism scale, which is made up of ten items expressing belief in clear standards, the ability of the young, and the need for wide-ranging responsibility, and including also the degree of activity in social organizations. It stands independently as a factor denoting active involvement and commitment.

Factor IX: - Use of Nuclear Weapons and Scientific Control - incorporates the rejection of war, nuclear or otherwise, and the rejection of scientific control over central human events. It is therefore a factor to do with the perceived connection between blind technology and human destruction. This dual rejection is associated with a belief that war is inevitable, and therefore the factor has a kind of desperation in it.

Factor X: - Optimism - is made up of beliefs about the future prospects of self, country and world, combined with perception of opportunity, the belief that New Zealand will escape war damage and the belief that a big power will start the next war. Thus it is a strongly New Zealand-oriented set of associated conceptions, in which the possibility that the rest of the world will be at war is held along

with a belief that we in New Zealand will be safe.

This section has presented results demonstrating the stability of attainment and aptitude factors for the whole age group. It has also shown, in the case of seniors, the existence of a religion factor and the relative importance of factors of expectation of war and of social breakdown. Other factors concerning future peace, rejection of men's leadership, activism for peace, rejection of militaristic and deterministic science, and optimism were also discussed. These factors have considerable potential as detail for the broader domain of adolescent cognition reaching beyond traditional academic factors. Considered as complementary to standard cognitive and affective variables, the future orientation factors are conditioning factors which exert an influence upon life styles. They represent the adolescent's expectations of what his world will be and what he would like it to be, which follows from what he has experienced. Thus future orientation of youth is an intellectual outcome of his total socialization. It is also doubtless a real cause of future developments. From this stance it becomes obligatory to consider again the relative importance of the factors. Aptitude, the fourth factor, is what he can do; but it is not as important an outcome of socialization as attainment, which is what he has done; nor the expectation of war or social breakdown, which is his conceptual organization of the world in which he will have to live. Insofar as education tends to be obsolescent, dealing with what has been and leaving to chance the student's formulations of the future; and recalling that education is preparation for the future, it is salutary to recognize that such basic issues as the survival of the race and the stability of society are by no means clear-cut knowledge for pupils, but that students vary so widely on them that these factors are of greater vector space than basic skills. The other factors, to do with peace proposals, self-role, adult leadership and the possibilities and desirability of scientific control obviously represent cognitive ploys in the individual's basic approach to future developments. Such outcomes represent a socially important issue, namely the potential engagement of youth with future society, and therefore are to be regarded as within the outcomes for which both formal and informal education are accountable.

The Non-Intellective Factors

Results of the factor analyses of the non-intellective variables are presented in Appendix F, Tables XLVI - L. Separate factor solutions were obtained for males, females, juniors, seniors and the

total population. These will be presented in summary form in the following tables and discussion reserved to the end of the section. In all cases the HSPQ B (intelligence) scale is included as a marker variable.

In Table 11 are found the main factor components and loadings on non-intellective variables for males.

Table 11: Summary of Oblique Primary Factors
of Non-Intellective Variables for
Males

N = 1016

<u>Factor I: Personal Familial Adjustment 13.44%</u>		
R	Non-adjustment to reality	-.844
FR	Family relations problems	-.816
C	Conformity problems	-.787
ES	Emotional instability	-.711
M	Mood problems	-.620
FSO	Future self orientation	.348
<u>Factor II: Practical vs. Literary Preference 7.83%</u>		
MCD	Mechanical preference	.828
PRC	Practical preference	.727
LIT	Literary preference	-.781
ODR	Outdoor preference	.539
SRV	Social service preference	-.528
I	Aesthetically sensitive	-.362
<u>Factor III: School Environment Press 5.34%</u>		
IF	Index of favourability	-.705
STI	Studios interest	-.661
PTA	Perception of teacher's attitude	-.631
AAC	Attitude - academic	-.445
HS	Happiness scale	-.425
Q3	Controlled	-.398
AAP	Attitude - appearance	-.384
SE	Self esteem	-.384
AT	Attitude to teachers	-.369
<u>Factor IV: Clerical vs. Aesthetic Preference 4.28%</u>		
CL	Clerical preference	-.838
CMP	Computational preference	-.822
ART	Artistic preference	.561
PRS	Persuasive preference	-.478

Table 11 contd....

<u>Factor V:</u>	<u>Self-sufficiency - Sociability</u>	4.07%
Q2	Self-sufficiency	.711
SOI	Social interest	.699
SR	Social relations problems	-.688
L	Leadership problems	-.639
A	Sociable	.636
F	Enthusiastic	.511
<u>Factor VI:</u>	<u>Problem - Centredness</u>	3.59%
B	Bright	-.824
G	Persistent, conscientious	-.777
H	Adventurous	-.719
E	Aggressive	-.352
<u>Factor VII:</u>	<u>General Anxiety</u>	3.36%
Q4	Tension	-.755
D	Excitability	-.753
C	Ego strength	.549
O	Guilt proneness	-.423
<u>Factor VIII:</u>	<u>Religion - Submissiveness</u>	3.02%
RLPP	Religious practice - pupil	-.780
E	Dominance	.363
<u>Factor IX:</u>	<u>Attitude to School</u>	2.64%
AGC	Attitude - general commitment	-.621
AV	Achievement value	-.466
DD	Delinquency detected	.404
ATD	Attendance	-.403
AAP	Attitude - appearance	-.392
AAC	Attitude - academic	-.385
<u>Factor X:</u>	<u>Science Preference</u>	2.51%
SCI	Science preference	.781
ASM	Aspiration - mobility	.571
ASE	Aspiration - education	.540

Examination of the other factor tables for non-intellective variables shows that with the exception of Factors VI and X, each of the above factors is closely approximated by factors occurring in at least three of the other four subgroups - females, juniors, seniors, and total. Therefore, in order to avoid undue repetition, only the suggested titles of the factors for the other subgroups, with the percent variance in each factor and its match in the male factors will be recorded in the following summary table.

Table 12: Summary of Factor Analyses of Non-
Intellective Variables for Four
Sub-Groups

(Summary of Table XLVII)

Data Source: Females, N = 880		(Oblique Rotation)		
Factor No.	Title	% Variance	Equivalent or Similar Male Factor	%
I	General Anxiety	14.92	VII	3.36
II	School Press	7.63	III	5.34
III	Computational vs. Outdoor Preference	5.55	IV	4.28
IV	Sociability	5.03	V	4.07
V	Attitude to School	3.83	IX	2.64
VI	Practical vs. Science Preference	3.50	II	7.83
VII	Medical vs. Aesthetic Preference	3.13	II	7.83
VIII	Sensitivity - Succorance	2.89	-	-
IX	Religion - Passivity	2.43	VIII	3.02
X	Personal - Familial Adjustment	2.38	I	13.44

(Summary of Table XLVIII)

Data Source: Juniors, N = 1035		(Oblique Rotation)		
Factor No.	Title	% Variance	Equivalent or Similar Male Factor	%
I	Personal - Familial Adjustment	13.80	I	13.44
II	Computational vs. Outdoor Preference	7.08	IV	4.28
III	School Press	6.43	III	5.34
IV	Science vs. Practical Preference	4.61	II	7.83
V	Sensitivity - Succorance	4.24	-	-
VI	Sociability	3.58	V	4.07
VII	General Anxiety	3.22	VII	3.36
VIII	Problem - Centredness	3.04	VI	3.59
IX	Literary vs. Vocational Preference	2.73	II	7.83
X	Religion	2.59	VIII	3.02

Table 12 contd.....

(Summary of Table F.II)

Data Source: Seniors, N = 861		(Oblique Rotation)		
Factor No.	Title	% Variance	Equivalent or Similar Male Factor	%
I	General Anxiety	14.11	VII	3.36
II	Sensitivity - Succorance	7.50	-	-
III	School Press	6.86	III	5.34
IV	Computational vs. Aesthetic Preference	4.53	IV	4.28
V	Vocational vs. Literary Preference	4.21	II	7.83
VI	Personal - Familial Adjustment	3.51	I	13.44
VII	Religion - Persistence	3.03	VIII	3.02
VIII	Sociability	2.96	V	4.07
IX	Science Preference	2.68	X	2.51
X	Attitude to School	2.48	IX	2.64

(Summary of Table F.L)

Data Source: Total, N = 1896		(Orthogonal Rotation)		
Factor No.	Title	% Variance	Equivalent or Similar Male Factor	%
I	Sociability	13.67	V	4.07
II	Sensitivity - Succorance	7.05	-	-
III	School Press	6.45	IX	2.64
IV	Level of Functioning	4.57	-	-
V	Clerical vs. Outdoor Preference	4.42	IV	4.28
VI	Science vs. Practical Preference	4.06	X	2.51
VII	Personal - Familial Adjustment	3.26	I	13.44
VIII	General Anxiety	3.03	VII	3.36
IX	Literary vs. Vocational Preference	2.60	II	7.83
X	Uninterpretable			

Reference to the two tables immediately above indicates good reason to accept the stability of the factors Personal - Familial Adjustment, Practical vs. Literary and/or Aesthetic Preference,

School Environment Press, Computational vs. Outdoor or Aesthetic Preference, Sociability, General Anxiety, Religion, Attitude to School, Science Preference, Problem-Centredness. There are sex differences and age differences in the weighting of several of these factors in the total trait pattern.

Personal - Familial Adjustment is the prime factor in the non-intellective domain for males and juniors but is the least prominent for females and of only moderate weight for seniors and for the total data set. It is obviously strongly influenced by the sex difference, therefore, so that a mixing of data produces a misleading indication of its real function. The recurrence in the several analyses of the MCI scales concerning reality, conformity, family relations, emotional stability and mood problems in this factor suggests that a non-specific adjustment dimension exists, which expresses itself in perception of environmental events in generally constructive or unconstructive ways. That the factor is of far greater importance for males can be understood as arising from a more intense person-environment press upon males which is related to the demand for males to compete and achieve in the world of masculine industry. A polarizing of males in both internal adjustment and interpersonal relations arises from the fact that very different states of fulfilment and frustration are provided for males in different sub-groups of adolescent and child age levels. As a result, if a male is positive on one of these major indices, he is likely to be high on the others. It is significant that the other scales which cluster with the MCI scales in this factor, viz. future self orientation, happiness, self-esteem, persistence, and perception of opportunity have to do with perceptions of self, of past life, and of the future, and the trait of persistence. It is to be expected, therefore, that the factor would relate positively to a productive harnessing of energy in achievement.

Practical vs. Literary and/or Aesthetic Preference is a factor which changes in the nature of the polar variable opposite to the focal variable. In males it is practical vs. literary; in females and juniors it is practical vs. science; in seniors it is vocational - practical vs. literary - art; in the total data it is practical vs. science. The factor expresses a major motivation which in males separates the doers from the readers, and in females the practical from the theoretical. The difference in the male and female factors arises from the fact that males are separated clearly in school and

the world of work to the practical and the literary, while for females and juniors the distinction is between the practical role and the alternative masculine role of a scientific, educational career. Consideration of those factors for males, females and juniors in which literary and arts preferences are in polarity with practical and mechanical or medical (nursing) preferences suggests that some confusion of correlations may have arisen from inclusion of juniors in the analyses. At senior level, the lines are drawn much more clearly. The practical and vocational preferences are in polarity with the literary and aesthetic, while science preference stands alone as a different factor. This would indicate that by the time pupils become seniors, the simple choice between practical and science motives is no longer relevant, having already been decided by low ability pupils dropping out, and by the choice of specialized programmes. A new alignment of science with aspiration takes the place of the choice-situation between science and non-science. A new polarity arises however, in that the various vocational pursuits must compete for preference with the still viable literary and aesthetic interests. The result is that in seniors, non-science preference divides into the vocational (mechanical, nursing, practical), and the literary and art preferences. The existence of three cultures - scientific, practical and literary - is suggested. The fact that the science factor existed in the male analysis as well as the senior suggests that science plans are clearer in males, regardless of age, than in females.

School Environment Press is a particularly stable factor throughout the five analyses. Its suggested title represents the major component of a needs-press situation - the perception of the environment impinging upon oneself in ways which are potentially gratifying or threatening to dynamic needs. The variables in the factor are perceptions of how significant others regard self, perceptions of the affective state of self, and the behaviour of self in this environmental press. It is evident that the behaviours of studious interest, academic attitude, care of appearance, and impulse control are both required by others and preferred by self for their consequences in a desirable interaction of self and school.

Computational vs. Outdoor or Aesthetic Preference, like the Practical factor, represents several patterns of choice pivoting on the one preference. Computational and clerical preference together are variously opposed to artistic (by males and seniors) and to outdoor (by females and juniors). The total data analysis confirmed the

computational vs. outdoor polarity. In all but one group, persuasive preference is in the factor, loaded positively with computational and clerical. It is apparently a business and office preference, with some association with persuasion as in sales and promotion. Sociability is a well-known personality trait, and is here depicted in considerable detail as comprising self-sufficiency, social activity or openness, enthusiasm and a lack of social relations problems and leadership problems. In females, the qualities of adventurousness and lack of self-criticism are quite important additional components. The factor emerges as the major factor for the total sample, containing 14% of variance, but this cannot be sustained when for no sub-group the percent variance was greater than 5%. The total analysis confirms the factor, but the sub-groups demonstrate its relative weight.

General Anxiety in males comprises three of the five HSPQ factor scales specified by Cattell and Beloff (1962) as those which make up their second-order anxiety factor. In the female sub-group the complete six HSPQ factor scales so specified comprise the factor. In juniors the neurotic tendencies described by Cattell and Beloff are suggested by the inclusion of delinquency in the factor. In seniors some rejection of appearance standards accompanies the factor. It is the prime factor in females and seniors and is clearly of major importance as an emergent finding for the present study. Its dominance for females and for seniors can be seen in the light of the earlier maturation of girls, as a feature of the older adolescent development.

Religion is shown again as having different personality and attitude functions for the sexes. In males it entails submissiveness; for females, lack of perception of opportunity; for juniors, only beliefs and practices; for seniors, greater delay of temporal gratification and greater persistence. The socializing goal of religion in the interest of adjustment to expected roles seems well internalized. Attitude to School assumes meaningful shape as a dimension of pupil personality. Its positive features are commitment, appearance, academic attitude, achievement value and attendance, while its negative feature is delinquency.

Science Preference has been discussed above in connection with the age differences, in the Practical Preference factor.

Problem - Centredness occurs only in the male and junior sub-groups. It is interesting for one thing, apart from its intrinsic meaning, namely the fact that the marker variable B did not load significantly

on factors in three of the five analyses. Its meaning in the two analyses under view is not so much intelligence as an energy application which, through reinforcement, has become an enduring part of the personality.

In this section the results of factor analyses of 51 non-intellective variables have been discussed. The variables had been selected to represent adjustment, basic personality traits, affective states, attitudes, self-perceptions, behaviours, aspirations, perceptions of the environment, and occupational preferences. The factors which were obtained by rotation showed both stability and meaningful differences among age and sex sub-groups.

Two adjustment factors - personal - familial adjustment, and sociability - were found to be very important, the first being the biggest factor for males and juniors, the second being the most generally important factor.

Two basic traits were found - general anxiety and problem-centredness. Anxiety is the largest factor in females and seniors.

Three bi-polar motives were found - practical vs. literary and/or aesthetic preferences; computational vs. outdoor or aesthetic preferences; and science preference. At senior level and in males the science preference is an independent factor. In juniors and females, science and practical are bi-polar motives, as are computational vs. outdoor, and vocational vs. literary or aesthetic. The emergent motives at the senior level, where it becomes crucial, are science, practical - vocational and literary - aesthetic.

Two person-environment interaction factors emerged - a school environment press, combining perceptions of favourability, of self-worth, of attitudes to teachers, of affect and of impulse control; and an attitude to school factor, comprising variance on commitment, conformity, achievement values and delinquency.

Finally a religion factor was found to have differential composition, but supporting the internalization of conformity via achievement in males and conformity via depressed aspiration in females.

There seems little doubt that the non-intellective domain for adolescents can be conceptualized in terms of the intrapersonal:- adjustment and anxiety; the interpersonal:- environmental press, attitudes and religious socialization; and the vocational:- the motives involved in orientation to the world of work.

Chapter 9

CORRELATES OF EDUCATIONAL OUTCOMES

This chapter reports the results of the regression analyses of environmental effects on performance and personality outcomes, and of personality effects on performance.

Environmental Effects on Performance

From the factor solutions for various subgroups it was decided that the variables most representative of the intellectual factors were DAL (Language Usage) and AA (Attainment Average). Similarly, from the factor analysis of family social environment and family relationships were selected the dominant variables of those factors. These were assumed to be the best variables to put in a regression analysis. This procedure also cuts out in advance some potential suppressor variables. In all, nineteen predictors were put into the matrix with each performance criterion. Regression analyses were carried out separately for sexes, ability levels, and social class levels for each of the two criterion variables.

Results of these analyses are presented in Tables G. LI - LXIV. In each table, the following material is reported:

Dependent variable (e.g. DAL)

Number of cases (N)

List of predictors retained in the analysis

Simple correlation coefficient (r)

Normalized regression coefficient (Beta)

Partial correlation coefficient ($r_{12.3}$)

Coefficient of contribution (100 times the product of r and Beta)

Multiple correlation coefficient (R)

Coefficient of multiple determination (R^2 : multiplied by 100 to express percent variance on the dependent variable accounted for by the K-1 remaining variables.

Hays, 1963)

The standard deviation of the residual (SD_y , providing an index of the usefulness of the regression rule in predicting the observed scores on the dependent variable, y .)

for the DAL criterion

Examination of Table G. LI shows that in females, the total predictive efficiency of environment variables is 8.34%. Both in the simple r and partial r coefficients the major predictors are shown to be father's educa-

tion and the parental expectation that the daughter do regular household duties. The coefficients of contribution confirm this. Residual variance is rather high. But a useful pointer to environmental influence is provided which may be expected, in conjunction with other kinds of predictor, to help toward more complete understanding. The analysis for males, in Table G.LII, reveals a slightly more efficient prediction (10.3%). It can be seen that in addition to father's education and the parental emphasis on duties, significant contributions come from supportive relationship with each parent, and less angry-rejection by the father. The parent-child relationship is shown to affect male aptitude but scarcely to influence female.

Analyses for high-, middle- and low-ability students are reported in Tables G. LIII - LV. The ability groups were sorted on the basis of the three thirds of the actual range of attainment average scores. Comparison of the three 100 R^2 estimates (18.65%, 8.73%, and 9.65%) shows that the influence of environment on aptitude is clearly greatest in those of higher attainment. The greatest influence on higher ability pupils comes from lower angry-rejection by the father, higher father's education, higher father permissiveness, higher mother support, lower mother anxiety-sensitivity, higher parental expectation of duties, and private primary school. In middle ability pupils, father's education, mother support, expectation of chores and private primary school were not contributing as in higher ability. But less family size and parental anti-smoking attitude were a help. In the lower ability pupils, the predominant influences in the 9.65% predictive efficiency were mother support, expectation of chores, anti-smoking attitude, and father's education. The gain, for the high ability pupils, appears to come in the form of a more satisfying and strengthening relationship with the father.

Relationships with aptitude in two socio-economic levels are reported in Tables G. LVI - LIX. Results show similar influences and prediction levels for each of two broad levels - lower SES (unskilled, semiskilled and skilled) and upper SES (clerical, managers, owners, farmers and professionals). The groups are obviously too heterogeneous to capture the kinds of difference in environmental influence shown in the ability levels. Family size and father angry-rejection have a negative influence in the higher SES group which is not found in the lower.

Attainment. Tables G. LVIII - LXIV contain results of the regression analyses on the attainment average score (AA). It is to be recalled that the AA scores run negatively, from 5 - 1. Reference to Table G. LVIII will show

that in females the primary and only notable environmental influence is mother demand, which influences lower AA. Table G. LIX shows that in males the influences are father decease and private primary school attendance, both influencing lower attainment. The respective multiple determinations for females and males are 7.1% and 6.49%. The residual as printed by the programme is obviously a 100 times multiple of the actual figure. This arises from the fact that the AA score for computing was assessed to two decimal places.

The analyses for high, middle and low ability pupils are found in Tables G. LX - LXII. Only very small predictions, 4.64% for high ability, 3.78% for middle, and 6.3% for low, were obtained. Of course the method of grouping into ability levels by use of the AA variable itself reduces the variance considerably. This is reflected in the residual S.D. of 4.02, 1.64 and 4.39 respectively. The question that is being answered, therefore, is 'How much of the upper (or middle or lower) third of the variance on AA can be explained by environmental influences?' The answer is, very little, but what there is is contributed mostly by father absence (which is negative to attainment in higher ability pupils), by private school attendance (which is negative to AA in middle ability pupils) and by father's education, a positive influence, and mother demand (which is negative to AA in the case of lower ability pupils).

Tables G. LXIII - LXIV show that environment has a greater effect on attainment in the higher than the lower socio-economic levels. Family size and father decease are negatively related to attainment in higher SES students, while private primary schooling is negatively related to attainment in lower SES students.

Environmental Effects on Personality

Fifteen variables were selected from the various factors of non-intellective variables as best indicators of factors and thus the most useful criterion variables for regression analyses. Each criterion was studied in male and female subgroups separately. Results are found in Tables G. LXV - XCIV.

Conformity problems. In Tables G. LXV and LXVI are presented the results of the regression analyses on the MCI C-scale, measuring conformity problems. The strongest environment contributors to the factor in males are mother anxiety-sensitivity, (4.80%), lower mother support (4.20%) and father angry-rejection (4.16%), while lower father support (1.25%), father decease (1.20%), state primary schooling (1.17%) and father anxiety-sensitivity (1.08) bring total multiple determination to 22.75%.

In females the parent-child relations have still greater impact (lower mother support, 14.4%; father angry-rejection, 7.20%; mother anxiety-sensitivity, 6.30%; lower parental attitude - chores, 2.32% lower father support, 1.60%; larger family, 1.53%), producing 36.5% explanation of variance on conformity problems. Parental support, anger and anxiety are therefore major factors in adolescents' conformity problems.

Family Relations Problems. Results of the regressions on the MCI - FR scale are found in Tables G. LXVII and LXVIII. Multiple determination reached 55.12% for females, contributed by lower mother support, (24.18%), mother anxiety-sensitivity, (11.34%), father angry-rejection, (11%), lower father support, (5.00%), lower respect for mother (1.44%) and father absence (1.43%). In males, 36.1% of variance was predicted, almost equally contributed by lower mother support (9.03%), and lower father support (8.40%), followed by father angry-rejection (6.56%), mother anxiety-sensitivity (5.40%), father anxiety-sensitivity (2.04%), and lower respect for mother (1.89%). Parental practices are apparently a major factor in family relations problems.

Non-Adjustment to Reality. Presentation of the regression analyses on the MCI scale R is made in Tables G. LXIX and LXX. In females, 26.4% of poor adjustment to reality is explained by environmental variables. These are lower mother support (6.60%), mother anxiety-sensitivity (6.46%), father angry-rejection (4.95%), lower father support (2.17%), lower parental attitude - chores (2.07%), father absence (1.95%), lower father permissiveness (1.74%) and lower father's education (1.04%).

Male non-adjustment to reality is not easily explained in multiple regression terms, since three of the four major predictors are suppressor variables. Though mother anxiety-sensitivity, father anxiety-sensitivity and father angry-rejection are all moderately correlated with the R score at the simple level, their partial correlation is considerably smaller. They are, therefore, having little independent effect. It is difficult to say, therefore, whether the multiple determination coefficient of 14.8% is meaningful.

Social Relations Problems. Results of the regressions on the MCI SR scale are reported in Tables G. LXXI and LXXII. In males 10.02% of variance on SR is explained, the specific influences including lower father support (2.99%), lower mother support (1.89%), lower father permissiveness (1.87%), larger family size (1.54%), and father anxiety-sensitivity (1.32%). In females, 10.07% explanation of variance on SR is contributed, the main predictors being lower mother support (3.68%), lower father support (2.20%),

rural residence (1.08%), and less father's education (1.04%). Parental support is therefore the major environmental influence on social relations problems in both sexes.

Self Sufficiency (Resourceful). Regressions on the HSPQ Factor Scale Q2 are reported in Tables G. LXXIII and LXXIV. Multiple determination is 6.53% in females and 3.31% in males. The contributing factors in females are lower respect from mother (1.50%), lower mother support (1.35%) and less father permissiveness (1.21%). In males no environmental factor reaches 1% prediction of the Q2 scores. It is of more than passing interest that self-sufficiency in females arises from a lack of close relationship with the mother.

Sensitivity. Results of the regression analyses on the HSPQ Factor Scale I are found in Tables G. LXXV and LXXVI. In males, only 4.7% of sensitivity is predicted from the home environment factors, the only individual predictor of note being father's education (1.20%). In females, more than twice the amount predicted for males is obtained from the regression - 9.65%. While father's education exerts the same influence as in males, a greater contribution comes from parental attitude - chores (3.23%) and mother support (2.25%). It appears, therefore, that there is a sex difference in the learning of sensitivity, and that the greater family influence on girls' sensitivity is rooted in domestic training in a supportive mother-daughter relationship.

Sociable. Tables G. LXXVII and LXXVIII contain the results of the regressions on the HSPQ Factor Scale A.

In females the trait increases with mother support ($rB \times 100 = 1.76$), with urban residence (1.21) and father's education (1.08). Total percent prediction is 8.13. In males, only mother support (1.40%) contributes notably; total multiple prediction is 5.21. Urban life, father's education and mother support suggest an environment of encouragement and suitable experience for acquiring sociability.

Tension. The regression results for the HSPQ Factor Scale Q4 are presented in Tables G. LXXIX and LXXX. Only 3.24% of the factor in females is predicted by the environmental variables, with no individual variable adding as much as 1%. In males 5.57% prediction is provided mainly by the effect of mother anxiety-sensitivity (1.82%), father anxiety-sensitivity (1.30) and private primary school attendance (1.10%).

Index of Favourability. Results of regressions on the IF score are given in Tables G. LXXXI and LXXXII. Multiple determination of IF by the environ-

mental variables is 11.98% in females and 11.76% in males. Contributing factors in females are father support (3.84%), mother support (2.60%), parental attitude - chores (1.71%), respect from mother (1.60%), and respect for mother (1.20%). In males the main predictors are respect from mother (3.91%), mother support (2.64%), parental attitude - non-smoking (1.95%) and parental attitude - chores (1.19%). Thus a respecting, supporting mother-child relationship, with training in cooperation underlies the adolescent feeling of being favoured by teachers.

Teachers' Attitude to Self. Regression analyses on the ratings of pupils' positive perceptions of teachers' attitudes to them (PTA) are reported in Tables G. LXXXIII and LXXXIV.

In males, 7.51% of variance on the criterion is predicted by the family environment factors. The only distinctive contribution comes from respect from mother (FRM), accounting for 1.87%. A slight cumulative influence of positive and negative features of family relationships is apparent in the regression analysis. A somewhat greater prediction is obtained for females (8.9%). The variable is positively influenced by father support (2.10%) and mother support (1.20%), and negatively by mother demand (1.95%).

General Commitment to the School. Results of regressions on AGC scores are given in Tables G. LXXXV and LXXXVI.

Very little of the variance on this attitude can be predicted from the family environment variables - in males 2.84% and in females 3.42%. No distinctive contribution is made by any predictor, although supportive and standard-setting behaviours are suggested by the individual coefficients of contribution.

Social Interest. The reports of the regression analyses on Social Interest (SOI) are found in Tables G. LXXXVII and LXXXVIII.

Multiple determination of the variable in males is 6.73%, contributed more by the father permissiveness scale than by any other predictor. In females, the total prediction is 9.62%, the strongest predictor again being father permissiveness, with respect from mother also strong.

Medical Preference (MCD). This scale is for females only, and relates mainly to nursing and related occupations. Regression analysis as reported in Table G. LXXXIX, predicted 4.24% from home environment, the main contributor being mother demand (1.10%).

Mechanical Preference (MCD). This scale is for males only. Reference to Table XC shows that it is much more predictable (12.21%) than is the corresponding medical preference in girls. It is more likely with lower father's education (100rB = 2.66), lower mother support (1.82%), less father permissiveness (1.40%) and more father angry rejection (1.17%).

Clerical Preference. Results of the analyses on the Clerical Preference (CL) scale are presented in Tables G. XCI and XCII. The amount of multiple prediction for females is 8.18%, contributed mainly by lower father's education (1.82%), a parental mobility attitude (1.32%), lower mother support (1.32%) and lower father support (1.04%). In males, only 4.43% is explained by home environment and no predictors stand out. Residual standard deviation is high and it is therefore not of good accuracy as a prediction rule.

Science Preference. In both males and females, as Tables G. XCIII and XCIV show, the regression accounted for a small, but still important amount of variance on science preference (SCI). The 7.96% multiple determination in males was contributed mainly by lower father angry-rejection (2.04%), smaller family size (1.65%) and higher father's education (1.10%). The 7.19% prediction for females derived more from father support and father's education than from other predictors.

Personality Effects on Performance

Sixteen personality variables were selected as the best predictors of the various factors found for the non-intellective domain among different subgroups. The dependent variables for study were the performance variables, DAL and AA. Having assessed the multiple relationship of home environment factors to these, the question was, 'What is the influence of personality factors on performance?'

Aptitude. Regression analyses on the language usage test scores (DAL) were carried out for subgroups of sex, ability and social class. Results are reported in Tables H. XCV - CI. Coefficients of multiple determination were closely similar for all subgroups, the range of predictive efficiency being 26.8% to 31.5%. It can be concluded immediately that personality influences on aptitude are not subject to structural social variations, about 30% of aptitude performance being attributable to these predictors for all subgroups studied.

It is recognized that the broader term 'personality' has to be used, rather than 'non-intellective', to describe the predictors, since the HSPQ general intelligence factor score B has been utilized as a personality variable. This procedure seemed useful, since it provided an opportunity to compare the influence of affective traits with a general intelligence index. The multiple determination so achieved is, as a result, a more complete indication of the contribution of pupil properties as opposed to environment properties. It is to be recognized, however, that none of the personality scales used in the regressions was designed specifically as a predictor of academic performance. It is, therefore, a rather conservative

quest, psychologically speaking, for the results cannot be more than minimal as an estimate of personality influences on academic performance. Even so, compared with earlier efforts to explain academic factors by personality variables the results are of considerable significance.

Sex differences in total predictive effect of personality variables are greater than ability or class differences. The contributing variables for males are: Bright (10.14%), Adjustment to Reality (5.89%), Science Preference (5.12%), Practical Preference, a negative predictor (3.51%), Mechanical Preference, a negative predictor (2.20%), Family Relations (1.82%), and Sociable (1.12%). In broad terms, the one third of aptitude predicted by personality variables is attributable one third to general intelligence, one third to adjustment, and one third to motives, i.e. preferences.

For females, the contributing variables are: Bright (14.19%), Adjustment to Reality (3.12%), Sociable (2.40%), Family Relations (1.62%), Practical Preference (1.52%), Science Preference (1.33%), Calm (1.30%), Clerical Preference (1.26%). The 27% of female aptitude attributable to personality factors divides roughly into one half general intelligence, one third adjustment, and one sixth motives. Thus intelligence is loaded on aptitude more heavily than either adjustment or motives in females, while in males, whereas adjustment has about the same influence as in females, intelligence has less and motives have more. The relevance of the difference in effect of motives is to the stronger intrinsic orientation of males. This appears to interact with intelligence to produce effects on aptitude in males which are not attributable to this source to the same degree in females.

Differential effects of traits on aptitude in different ability levels can be demonstrated by the device used above, i.e. summing of the coefficients of contribution. The contribution to the total prediction of about one third of the variance on aptitude is attributable in the ability levels broadly as follows:

	<u>Lower</u>	<u>Middle</u>	<u>Higher</u>
Adjustment	13%	10%	20%
Intelligence	12%	14%	5%
Motives	4%	7%	7%

Clearly intelligence is of far greater influence on aptitude in the lower two thirds than in the higher ability group. Adjustment, correspondingly, is of much greater influence in the higher than the other two groups. In fact, two thirds of the predictive effect of personality variables on aptitude in higher ability pupils comes from adjustment variables in the

broad sense of the term. Since the criterion of ability was attainment, this means that among the high attainers, personality effects on basic aptitude may be interpreted as two thirds personality adjustment, one sixth intelligence and one quarter motives. This would be consistent with the findings already obtained showing that better adjustment and attainment are related to an advantageous and supportive home environment. The interaction between environment and personality is apparently such that in those who have the advantageous conditions, the decisive factors in the acquisition of basic aptitudes are more to do with constructive intrapersonal and interpersonal processes of an affective nature than with phenotypic intelligence.

A similar analysis for the upper and lower halves of the SES distribution serves to illustrate the same process. Relative contributions of aspects of personality to prediction of aptitude are as follows:

	<u>Lower SES Levels</u>	<u>Upper SES Levels</u>
Adjustment	11%	18%
Intelligence	18%	7%
Motives	4%	8%

The picture supports that for ability levels. The influence of pupil properties in higher aptitude in relatively advantaged adolescents is about two thirds attributable to adjustment and one third each to intelligence and motives. In less advantaged pupils, the influence of personality properties on aptitude is broadly interpretable as three parts intelligence, two parts adjustment and one part motives.

What is evident in these analyses is that there is not one single personality process influencing performance as measured by a basic aptitude test, but that there are different weightings of adjustment, intelligence and motives (i.e. occupational preferences) for the sexes, the ability levels and the social classes. Adjustment of various kinds is the critical factor in aptitude for males, for high ability pupils, and for higher social class pupils. Intelligence is at a premium in the acquisition of basic aptitude in females, less able, and less advantaged students. The implication is that the path to attainment is from intelligence through environment adjustment and aptitude. Those with the best environment develop the plus factors of adjustment, motives and aptitude, and thus are less directly dependent on native intelligence. Thus the greater role of intelligence in the performance of less able and less advantaged pupils is an indication of deprivation of other helpful dimensions of personality development.

Attainment. Regressions are reported in Tables H. CII - CVII. Adopting the same procedure as above for the demonstration of influences of person-

ality on attainment, the differences in male and female processes may be shown. Multiple determination for males is 17.99% and for females 16.6%.

A greater contribution of adjustment variables is apparent in the case of females, and a greater contribution of motives for males. In broad terms, the effect of personality adjustment on girls' attainment is matched by the effect of extrinsic motives in boys' attainment.

Examination of the contribution of the variables to prediction in higher and lower SES levels leads to the fact that there is greater contribution of adjustment and less of intelligence in the case of higher SES pupils. This repeats the phenomenon found in the prediction of aptitude.

In view of the lack of difference between lower and middle ability pupils in the case of the prediction of aptitude, it was decided to run regression analyses on attainment for lower and higher ability levels only. Multiple determination was 7.46% in high ability and 13.13% in lower ability pupils. It is evident from the coefficients of multiple determination that a generally higher influence of personality variables is found in lower ability pupils. This may be compared with the fact that environmental variables have a stronger effect on attainment in high ability students. Most of the personality effects on attainment in high ability pupils arise from adjustment variables. While in lower ability pupils over half of the influence attributable to personality arises from adjustment variables, somewhat more is attributable to motives than in the higher ability group.

Summary and Discussion

This chapter has reported and discussed stepwise regression analyses of relationships of home environment with performance and personality, and the influence of personality on performance.

Certain environmental and personality factors have been shown to have significantly constructive or deleterious effects on outcomes.

Prediction of Academic Performance from Home Environment. In the prediction of academic performance, eight variables have been identified as persistently influential. Higher father's education relates to greater aptitude in females, males, higher ability students, lower ability students and in the lower half of SES as judged by occupational level. Father's education also relates to higher attainment in females and in lower ability people.

Private primary school attendance relates positively to aptitude in higher ability pupils, but negatively to attainment in males, in the middle ability group and in the lower half of SES levels.

Greater family size adversely affects aptitude in the middle ability

group and both aptitude and attainment in the upper half of SES levels.

Parental attitude against smoking is positively related to aptitude in the middle and lower ability range and in the upper half of SES levels.

Parental attitude of expectation of chores is positively related to aptitude in females, males, higher ability and lower ability pupils.

Father anger-rejection adversely affects aptitude in the higher ability group (this is the strongest of all the environment contributions to multiple determination of performance), in the middle ability group and in the upper half of SES levels. There is presumably not enough variance on the father anger-rejection factor in lower ability levels to affect performance.

Father permissiveness-non-intrusiveness relates positively to aptitude in higher and middle ability ranges and in the upper half of SES levels. The same comment as above apparently applies at lower ability levels.

Mother support contributes positively to the prediction of aptitude in males, in higher ability pupils, in lower ability pupils, and in both upper and lower halves of SES levels.

From this summary it can be generalized that a home environment involving greater father's education, a smaller number of children, clear limits and expectations, a minimum of paternal anger and greater father permissiveness and mother support will be good for academic performance in most major child groups. An average of 10% of aptitude and 6% of attainment can be predicted in various groups from knowledge of these variables affecting pupils.

Prediction of Personality Factors from Home Environment. The same procedure resulted in the identification of twelve home environment factors which made a significant and meaningful contribution to dominant personality variables. Since the five foremost predictors far outweigh the influence of the others, they will be listed in order of weight and extensiveness of influence throughout the personality outcomes.

Mother support contributes to better conformity to social requirements in both sexes, but very strongly in girls. It contributes to a significant degree to better family relations - the latter more strongly in boys, to better adjustment to reality - the latter more strongly in girls; better social relations; less self-sufficiency in girls; greater sensitivity in girls; greater sociability; a belief that one is favoured by teachers; less likelihood in boys of preferring mechanical work and less likelihood in girls of preferring clerical work.

Father support contributes to better conformity to social requirements, better family relations, better adjustment to reality, better social relations, more belief on the part of girls that they are favoured by teachers,

and in girls, less likelihood of a clerical preference and more likelihood of a science preference.

Father angry-rejection contributes to the prediction of conformity problems, strongly to family relations problems and moderately to problems of adjustment to reality in girls, and to more likelihood of a mechanical preference in boys.

Mother anxiety-sensitivity contributes to conformity problems in boys and strongly to each of conformity problems in girls, family relations problems in both sexes and poorer adjustment to reality in girls. It also contributes to greater tension in boys.

Father's education contributes to the likelihood of better adjustment to reality in girls, to more sensitivity in both sexes, to more sociability in girls, to a less positive view in girls of how teachers regard them, to less likelihood of mechanical preference in boys and to greater likelihood of science preference in both sexes.

Father permissiveness-non-intrusiveness contributes to better social relations in boys, to less self-sufficiency in girls, to greater social interest in both sexes, and to less likelihood of mechanical preference in boys.

Respect from mother provides less likelihood of self-sufficiency in girls, and more likelihood in both sexes of perceived positive regard from teachers and of social interest on the part of girls.

Father anxiety-sensitivity contributes to the prediction in males of more conformity problems, family relations problems, social relations problems, and tension.

Parental expectation of chores contributes to the likelihood of better adjustment to reality in girls, more sensitivity in girls, and greater perceived favourability with teachers on the part of both boys and girls.

Respect for mother contributes to the prediction of better family relations in boys and girls and to greater perceived favourability with teachers on the part of girls.

Family size contributes to the likelihood of conformity problems in girls and social relations problems in boys and to less likelihood of science preference in boys.

Urban residence renders good social relations and sociability more likely in girls and mechanical preference in boys less likely.

The overall conclusion is that helpful features of home environment affecting personality are mother support, father support, minimal father anger-rejection, low mother anxiety-sensitivity, higher father's education,

more permissiveness of father, more respect from and for mother, less anxiety-sensitivity of father, parental expectation that children perform household duties, and all this in smaller families. From these variables it has proved possible to predict 22-36% of conformity problem variance, 36-55% of the family relations problem, 15-26% of poor adjustment to reality, and 8-12% of sensitivity, sociability, perceived favourability with teachers, social interest, mechanical, clerical and science preferences. These findings should be read in the awareness that each of the predictors and criteria represents a factor already established by earlier analyses and there is a reasonable presumption that where the variable is found the other variables will exist in accord with the factor structure.

Prediction of Academic Performance from Personality Variables. From the nineteen personality predictors of academic performance, eight have been identified as having some clear effect on the likelihood of academic performance.

The HSPQ Factor Scale B, measuring general ability is, relative to the other predictors, the strongest and the most consistent overall predictor of aptitude, which it predicts for all subgroups. The B factor also predicts attainment for all but the higher SES and high ability group. It is to be noted, however, that the motive variable Science Preference (SCI) is a stronger predictor than B in males, and is of comparable predictive utility for attainment in the lower half of SES levels. Of course the B scale is brief and not intended to be more than a guide to the place of the "g" factor in a prediction rule. But Cattell and Beloff (1962) claim that it is of "equal predictive value" to the other measurements in the HSPQ, meaning presumably that it constitutes as good an indication of the function of general ability as do the other scales of their nominal dimensions. If this be accepted, then it can be assumed that the relative contribution of B along with other personality variables in the set under discussion is meaningful information. While it could, indeed, be argued that this is not the true predictive strength of general ability for attainment, and that the balance could be changed considerably by use of a longer more complete intelligence test, the same could be said of almost any of the personality predictors. What is claimed for the present set is that they are comparably valid and complete measures without being specific to the task of predicting academic aptitude or attainment. As such, they provide an empirical ranking of personality effects on academic performance. The present list discusses the eight personality predictors in order of demonstrated overall predictive efficiency for aptitude and attainment in all seven subgroups studied. General ability has been noted first.

Poorer Adjustment to Reality (R) contributes to prediction of aptitude in all subgroups and to attainment in all but the low ability subgroup.

Science Preference (SCI) adds to the likelihood of aptitude in all but the low ability and high ability groups; and to prediction of attainment in all groups but females and high ability. The relative strength of SCI prediction in males and the lower SES groups suggests that for these groups in particular a studious motive equals or surpasses general ability as an influence on attainment.

The Sociable trait (A) predicts aptitude for all subgroups but males, and predicts attainment for only females and higher SES levels. Since a temporal sequence or causal relationship can be hypothesized on these results, it is fair to suggest a developmental sex difference in the relationship between sociability and aptitude on the one hand and sociability and attainment on the other. Males, being trained to intrinsic motivation early in childhood do not depend on the nature of their social interaction as an interpersonal condition of learning to the same extent as females and therefore their aptitude level is relatively unaffected by the aloofness or warmth of the individual's social personality. Consequently he expresses his aptitudes in attainment independently of his sociability. Females are the opposite. Social dependency is the condition and context of female social learning, and thus both aptitude and attainment in turn are affected by sociability, which may reasonably be seen as indicating a satisfying resolution of the social dependency process. The relationship of sociability to attainment in higher SES levels indicates that there is greater variability on both the independent and the dependent variables in the clerical through professional levels, and that sociability can be seen as one of the plus factors more generally found in the upper class which renders intelligence as such a less pivotal condition of attainment. This is consistent with the fact that higher SES levels comprise the only subgroup in which factor B does not contribute to the prediction of attainment. Practical Preference (PRC) is a negative predictor of aptitude in all subgroups and of attainment in males. Its function as a motive may be hypothesized as that of a learned value, only partly contingent on intelligence which causes selective attention to practical things throughout childhood and into secondary schooling so that the boy with a practical preference is initially formed by his socially learned value. While initially a cause of less academic application the practical preference becomes a self-validating consequence of less academic attainment.

HSPQ Factor I, Sensitive, contributes positively to the prediction of aptitude in all ability levels but high. It predicts aptitude also in

both higher and lower SES levels. It predicts higher attainment in low ability students and lower attainment in high ability students. These results must be read in light of the fact that I scores increase with higher father's education. A stronger influence of sensitivity on aptitude is found in the lower ability group. Again the facts suggest that the personality trait is a plus factor which is more pervasive at the higher SES level and thus does not affect variance on attainment except in terms of a general advantage, but is a differential factor in attainment of lower SES and lower ability people. The fact that sensitivity negatively predicts attainment in high ability students possibly means that whereas there is a generally higher sensitivity in high ability students, there is some optimum, and those high ability students who exceed optimum sensitivity suffer a negative effect on attainment. It is implied that there is a curvilinear relationship of sensitivity and attainment.

The Index of Favourability (IF) which is a major component of school environment press, predicts aptitude in higher SES levels, and attainment in both sexes, in both higher and lower SES levels, and in higher ability levels. It is a perceptual component of a generally more reinforcing or self-enhancing person-environment context of learning. Perceived favourability has more salience for attainment than for aptitude, which is reasonable in view of the contemporaneity of both the perception of favourability and attainment. It might be conjectured that a reason for greater IF scores with higher aptitude could be that aptitude gains favourable teacher responses, or alternatively that more favourable teacher pupil relations enhance aptitude. Guidance comes from the fact that it is only in the higher SES levels that IF predicts aptitude. Since aptitude, where it appears in lower SES levels, should normally be met with teacher rewards, it would be expected that this would produce a stronger differentiating effect in lower than higher SES levels, for in the lower levels the surprise effect would be more likely to operate. It can only be assumed, then, that some blanket effect of either undifferentiated teacher approval or disapproval prevents any ability on the part of more able lower SES level pupils from perceiving greater teacher approval for them. But at higher SES levels, teachers do apparently differentiate, with the result that these pupils when of higher aptitude, do perceive themselves as more favoured. It is unavoidable that this difference be linked with the fact that higher SES pupils are much more likely than lower SES to be in private schools. This would suggest that in private schools a more instructive and motivating discrimination in the expression of teacher favour might apply, while in the state schools, insofar as some mass treatment of lower SES pupils is more

likely, the more impersonal teacher-pupil communication would prevent to a large degree the discriminatory use of teacher favour, with its positive and negative effects. The finding is consistent also with the oft-corroborated fact that those who more usually succeed are motivated by criticism. Those who have profited by the discriminatory reinforcement of the teacher will see themselves as favoured by the teacher. If, as is suggested, this process occurs more among higher SES pupils and thus to a considerable degree in private schools, then it will follow that teachers' favour will relate to higher attainment specifically in higher SES pupils. This adds up to a further educational disadvantage for lower SES pupils, who are, it is argued, deprived of the full strength of teacher discrimination.

Computational Preference (CMP) contributes negatively to the prediction of aptitude in middle and high ability subgroups and in the upper SES levels, while being positively associated with attainment in males. While the scale is supposed to mean the same thing - interest in working with figures - in Forms M and F, it is noteworthy that it suggests more professional occupations for males than for females. e.g. the Phillips Occupational Preference Scale Manual (1965) lists as occupations reflecting the Computational stereotype, statistician for males (Form M) but statistics clerk for females (Form F). Likewise mathematician for males is matched by mathematics teacher in females. Thus, although purely numerical work is involved in both cases, the chances are that the male stereotype will appear more challenging to those of higher ability. It is this differential perception which possibly underlies the fact that the CMP preference predicts higher attainment in males but not in females.

Family Relations problems (FR) negatively predict aptitude in males, females, higher SES levels and more strongly in the upper ability level. The factor also negatively predicts attainment in higher SES levels. There is a tendency for no effect of FR problems in the performance of lower ability and lower SES pupils. Since ability is less in lower SES levels, and FR problems are more pervasive with both lower ability and lower SES, it is reasonable to conclude that to some degree FR problems form part of the general disadvantageous pattern of lower SES. The greatest variability in FR problems would therefore be at higher SES levels.

In broad terms, it is concluded that aptitude and attainment are more likely with greater general intelligence, better adjustment to reality, more scientific interest, greater sociability, less practical interest, more perceived favourability with teachers, and greater sensitivity. By use of these personality variables, about 30% of variance on aptitude was obtained in all subgroups. In no analysis did the general intelligence

factor contribute more than about half the multiple predictive efficiency, and its influence was lowest in higher ability, higher SES and male subgroups. About 13% to 18% of variance on attainment was predicted in the subgroups with the exception of the high ability subgroup, for whom $R^2 = .075$. The contribution of the general intelligence factor to the total predictive efficiency of the set of personality variables was less than one third of the multiple coefficient of determination and in some cases less than 1% of the total. This seems to support a view that the desired explanation of performance will be achieved only by taking into full account a complete set of relevant personality factors, rather than simply abstracting the intellectual factor.

The discussion of the relative influence of intelligence and other personality factors on outcomes, added to the previous material on environmental predictors, brings to prominence the need to try to explicate the distinctive contributions of the environmental, intellectual and non-intellectual factors to outcomes. The next chapter deals with that problem.

Chapter 10

INDEPENDENT AND JOINT EFFECTS OF HOME ENVIRONMENT
AND PUPIL PROPERTIES ON SELECTED OUTCOMES

In order to execute with reasonable economy the model presented in Figures 1 and 2, it was decided to select one representative outcome in each of the intellectual and non-intellectual domains and to carry out the necessary exhaustive regression analyses.

For the intellectual criterion, the obvious choice was the Attainment Average (AA) in view of its having been the criterion of attainment in the previous analyses and the fact that it is the most representative attainment variable. Though this choice had been made on the basis of the dominant loading of AA on the attainment factor, this had not led to correspondingly strong regression coefficients on AA. As compared with those on the aptitude criterion DAL, regressions on AA had little over half the strength of multiple prediction. It was recognized, therefore, that the measurement characteristics of the 1-5 attainment scores and their average were probably such that little more could be expected. But these, or the percent marks from which in some cases they were derived, are the actual assessment of outcomes used in the schools. Therefore, although as measurements they depress the strength of any regressions on them, they provide a real test of how much of school assessments, with the most earnest effort, can be predicted and by which predictors.

The selection of a non-intellectual criterion was difficult in another way. There were many factors of non-intellectual variables from which to choose. All of the dependent variables of the non-intellectual domain in the regression analyses of Appendix G were candidates for selection. The criteria of selection were: that the variable apply to all students in the population, that it be a standardized measure, that previous analyses have shown it to have strong associations with some predictors, and that it be a socially and educationally important factor. Application of these criteria led to the selection of the C-scale of the Minnesota Counseling Inventory. This scale measures the degree to which the adolescent has not been socialized into constructive conformity. The manual for the Minnesota Counseling Inventory (Berdie and Layton, 1957) describes the scale as differentiating students nominated by teachers as responsible and reliable from those identified by principals as having been in trouble with the law and those nominated by teachers as exhibiting behaviours considered pre-delinquent.

Thus the two selected criterion scores AA and C measure respectively, current overall attainment, and tendency to respond like a pre-delinquent. In reading the tables of the regression analyses on AA it is important to remember to reverse the sign since the AA score runs in the negative direction. Likewise, the C-scale measures problems with conformity, and positive correlates therefore are interpreted as having deleterious effects.

Effects of Home Background and Pupil Properties on Attainment. A total of seven separate regression analyses was necessary in order to be able to account for independent and joint effects of different categories of predictor on the criterion.

Results of the seven regression analyses for AA are presented in Tables I. CVIII - CXIV.

The first three tables report the multiple prediction obtained by the home environment, intellectual and personality variables when they are considered in the simple sense without attempting to account for person-environment interaction. By this means, home environment is shown to predict 5.81% of variance on AA, intellectual variables 30.79%, and personality 15.01% of the variance on attainment average. The total of these would be over 50%, but the model demands that some unknown portion of the observed relationship of each predictor with the criterion be considered due to interaction or overlap among predictors.

The model calls, therefore, for four further analyses, representing the possible combinations of the three sets of predictors. From these it is possible to deduce independent, joint and total effects. As a result, four levels of prediction are obtained: the simple, the combined, the independent and joint effects, and total effects.

These results are best presented in the order in which they were obtained:

Simple Prediction of AA

(A) Intellectual Variables	30.79%
(B) Home Environment	5.81%
(C) Personality Variables	15.01%

Combined Prediction of AA

(A + B) Intellectual Variables and Home Environment	33.11%
(A + C) Intellectual Variables and Personality	34.38%
(B + C) Home Environment and Personality	19.68%
(E) All Predictors	36.34%

Independent and Joint Effects on AA

A'. Independent effects of intellectual variables

$$= E - (B + C) = 36.34 - 19.68 = 16.66\%$$

B'. Independent effects of home environment

$$= E - (A + C) = 36.34 - 34.38 = 1.96\%$$

C'. Independent effects of personality

$$= E - (A + B) = 36.34 - 33.11 = 3.23\%$$

D. Joint or interaction effects of home environment, intellectual variables and personality

$$= E - (A' + B' + C') = 36.34 - 21.85 = 14.49\%$$

A corrected account of the effects of each predictor domain can be obtained by interpreting the model logically to say that the sum of the independent effects and the interaction effects is the best estimate of the total effects for each predictor set.

Total Effects on AA

Total Intellectual Effects = $A' + D = 31.15\%$

Total Home Environment Effects = $B' + D = 16.45\%$

Total Personality Effects = $C' + D = 17.72\%$

Because of the overlapping content, the total effects are not additive. But they provide a powerful comparison of relative contributions of sets of predictors to variance on the criterion. By this means it becomes possible to say that 86% of the obtained predictive efficiency can be considered due to the effects of intellectual properties, but only 46% can be directly considered in terms of intelligence alone. Thus to seek to influence attainment by directly manipulating intellectual variables would be to fail to account for the 40% of predicted variance influenced by the interaction of intelligence with the non-intellectual variables of personality and home environment. Similarly, 49% of the obtained predictive value can be attributed to the total effects of personality variables, but only 9% of it is the independent effect of personality.

Since a large part of explained variance on attainment is due to interaction effects, the case for person-environment interaction gains considerable support. This in itself may not be so important, but it points to principles of intervention which might well involve the identification and direct modification of key intellectual, environmental and non-intellectual variables.

Effects of Home Background and Pupil Properties on Conformity Problems.

Following the same procedure as for the analysis of the regressions on AA, the following results were gained for the prediction of the MCI C-score, the analyses being reported in Tables J. CXV - CXXI.

Simple Prediction of C

(A) Intellectual Variables	4.17%
(B) Home Environment	28.57%
(C) Personality Variables	56.70%

Combined Prediction of C

(A + B) Intellectual Variables and Home Environment	29.82%
(A + C) Intellectual and Personality Variables	56.85%
(B + C) Home Environment and Personality Variables	58.61%
(E) All Predictors	58.75%

Independent and Joint Effects on C

A'. Independent effects of intellectual variables	0.14%
B'. Independent effects of home environment	1.90%
C'. Independent effects of personality variables	28.93%
D. Joint effects of home environment, intellectual and personality variables	27.78%

Total Effects on C

Total Intellectual Effects	= A' + D =	27.92%
Total Home Environment Effects	= B' + D =	29.68%
Total Personality Effects	= C' + D =	56.71%

It appears that the conformity problem is explained almost entirely by personality. But the significant contribution of home environment - over 50% of the total multiple determination - makes it more than clear that domination of the conformity problem by personality is only apparent, and in fact the influence of the home environment mediated through personality is at least as important as personality itself. In this particular case, this is seen to be doubly so, in that one of the two major contributions to prediction from personality variables is by the adjustment variable Family Relations (FR). Thus while half of the total variance on conformity is due to mediated effects of the home environment, over half of the direct effects of personality are attributable to family relations problems as assessed by self-report. These are, of course, all questionnaire data and in fact the C and FR scales both come from the MCI. Though they do not arise from the same items, there is some possibility of a response set affecting both scales in the same direction. But even so, the evidence is overwhelming that aspects of home environment and self-reported family relations problems are the predominant influence in conformity problems.

The case is clearly made by both the examples of the testing of the model, that interaction of person and environment is such a large part of the total effect of even the most powerful predictor that it is impossible to consider either explanation or educational intervention without taking account of multiple interactions. This problem will receive further notice in the next, and concluding chapter.

Chapter 11

SUMMARY AND CONCLUSIONS

Summary of the Study

The problem investigated was that of factual, comprehensive definition, description and prediction of secondary school outcomes. Outcomes were conceived as cognitive and socio-emotional. Predictors were conceived as variables of home environment, school environment and pupil personality.

Propositions explored were: (1) that individuals in different structural settings are different in important attitudes, perceptions and behaviours; (2) that structural variables of the home background fall into meaningful major dimensions; (3) that parental attitudes and child-rearing practices fall into meaningful major dimensions; (4) that intellectual properties of adolescents in school fall into meaningful major dimensions; (5) that non-intellectual properties of adolescents in school fall into meaningful major dimensions; (6) that home background structural variables have some important relationships with intellectual attainment of adolescents in school, but not as strong as those of personal relations or those of an intellectual nature; (7) that intellectual characteristics of adolescents in school have some relationship with non-intellectual characteristics but far less than that of structural variables of home background which again have less effect than the personal relationship variables.

A multivariate, exploratory design was adopted, based on current theory advocating multivariate survey methods to assess social conditions. This involved use of a large representative sample and a wide array of variables to provide a factual description of the multiple relationships of variables within the field of natural human events and processes. Variables were selected to represent person characteristics, both intellectual and non-intellectual, and characteristics of the home environment and the school environment. The data were collected from all students enrolled in the two state secondary schools and five private secondary schools in Masterton, N.Z., in 1971. The two state schools - Makora College and Wairarapa College - are both co-educational. St. Josephs and St. Brides Colleges are Catholic boys and girls schools respectively. Rathkeale is a non-sectarian, primarily residential boys school. St. Matthews Collegiate School and Solway College are Anglican and Presbyterian girls schools respectively. Useable data were obtained from 85% of the enrolment of about 2,400, no school providing fewer than 81% of its enrolment. All data were obtained either

by pupil questionnaire or from the school records.

Results relevant to Proposition One were:

- (i) the seven schools differed widely in socio-economic class distribution, with more students from homes of higher status in the non-Catholic private schools;
- (ii) indices of higher socio-economic status of the family were associated with at least twenty educational variables, including more pre-school education, more private school education, less mother employment, less father absence, greater continuance at school, less delinquency, more parental pressure to succeed in school, more regular going out with parents, more positive family climate, more positive attitudes to teachers and higher primary school reading and arithmetic levels;
- (iii) disadvantages especially affecting delinquents, Maoris and those in families of unskilled class included lower parental education, greater father absence, large families, less parental concern about school failure, less family outings, deficient family climate, lower primary school reading and arithmetic levels, more negative view of how teachers regarded them, lower expectation of opportunity, and lowest self-rating of happiness.

Results relevant to Proposition Two were factors of the structural variables of the home background. There were six factors: I Parental education; II Urban residence; III Private school attendance; IV Family size; V Father absence though not deceased; VI Father deceased. Maori race was a component of the larger family size factor.

Results relevant to Proposition Three were:

- (i) the identification of five factor scales of parental child-rearing practices: I Support-Understanding; II Anger-Rejection; III Permissiveness-Non-Intrusiveness; IV Anxiety-Sensitivity; V Demand;
- (ii) the extraction of eight family relations factors: I Respect and Warmth; II Mother-Demand/Father Support; III Parental Anxiety/Father Anger-Rejection; IV Father Permissiveness-Demand; V Parental Companionship-Expectation of Cooperation; VI Parental Achievement-Demand.

Results relevant to Proposition Four were whole-data intellective factors of I Attainment; II Aptitude; III Religion. In addition, when the Future World Orientation scales were included in a factor analysis of intellective variables for senior pupils, the resulting ten factors were: I Attainment; II Expectation of War; III Social Breakdown; IV Academic Aptitude; V Conservative Religion; VI Peace through Economic and Military

Measures; VII Rejection of Male Adult Leadership; VIII Personal Activism for Peace; IX Use of Nuclear Weapons and Scientific Control; X Optimism.

Results relevant to Proposition Five were ten non-intellective factors: I Personal-Familial Adjustment; II Practical vs Literary and/or Aesthetic Preference; III School Environment Press; IV Computational vs Outdoor or Aesthetic Preference; V Sociability; VI General Anxiety; VII Religion; VIII Attitude to School; IX Science Preference; X Problem-Centredness.

Results relevant to Proposition Six were multiple determination coefficients showing

- (i) that significant positive home environment influences on both aptitude and attainment are: father's education, smaller family, parental attitude against smoking, parental expectation of household duties by adolescents, low anger-rejection by father, higher father permissiveness.
- (ii) that significant positive personality influences on aptitude and attainment are: general ability, better adjustment to reality, more scientific interest, greater sociability, less practical interest, more perceived favourability with teachers, and greater sensitivity.
- (iii) that percent contribution to prediction of the selected representative intellectual variable, Attainment Average, could be attributed to the following sets of predictors:

Independent effects of intellectual predictors	16.66%
Independent effects of home environment	1.96%
Independent effects of personality	3.23%
Joint effects of intellectual, home environment and personality predictors	14.49%
Total effects of intellectual predictors	31.15%
Total effects of home environment	16.45%
Total effects of personality	17.72%
All predictors	36.34%

Results relevant to Proposition Seven were multiple determination coefficients showing

- (i) that helpful home environment influences affecting personality outcomes are: parental support, minimal parental anger-rejection, low parental anxiety-sensitivity, higher parental education, more permissiveness of father, more reciprocal respect in relation to the mother, parental expectation that adolescents do household duties, and finally, smaller families. The major outcomes influenced by these factors were conformity problems, family relations problems and adjustment to reality;
- (ii) that percent contribution to prediction of the selected representative

personality outcome, conformity problems, could be attributed to sets of predictors as follows:

Independent effects of intellectual predictors	0.14%
Independent effects of home environment predictors	1.90%
Independent effects of personality predictors	28.93%
Joint effects of intellectual, home environment and personality predictors	27.78%
Total effects of intellectual predictors	27.92%
Total effects of home environment predictors	29.68%
Total effects of personality predictors	56.71
All predictors	58.75%

Conclusions from the Study

Conclusions can be reached regarding differences rooted in social settings. The evidence is overwhelming to show that general benefit, both intellectual and non-intellectual, is associated with higher socio-economic status. Clear indices of deteriorative processes exist in pupils from homes of lower socio-economic status, and most clearly in the case of Maoris and those with unskilled and semiskilled fathers. In purely descriptive terms the data have shown that to be of lower socio-economic status, as based on occupational level, is to suffer clear disadvantages such as lower parental education, less parental interest in children's progress, less supportive relationships with parents, less likelihood of continuing at school, less encouragement to succeed and more likelihood of sharing increasingly pre-delinquent characteristics such as lower primary school reading and arithmetic levels, more negative attitudes to teachers, less expectation of favour or of opportunity and a much greater sense of personal unhappiness.

These descriptive features are evidence of clear class-based disadvantage in the secondary schools, and they give good grounds to expect that where more explanatory processes of adolescent development are demonstrated, as in regression analyses, they will usually be found to work to the advantage of the higher social classes and to the disadvantage of the lower social classes.

Conclusions regarding the major dimensions of the home environment and of pupil characteristics are based on factor analyses.

The six factors of the structural environment of the pupils' families are a comprehensive mapping of factors which delineate the home environment in terms of socio-cultural level, geographic location, culture-religious distinctives of child-education, family size and father presence.

The major dimensions of the adolescent's family relationships incorporate, in order of importance: respect and warmth; demand from the

mother coupled with support from the father; anxiety and sensitivity of both parents coupled with anger-rejection by the father; a joint permissiveness and demand or high expectation on the part of the father; companionship with the parents combined with expectation on their part that adolescents help around the house; and parental expectations that the adolescent will get a good job, this expectation coupled with a demanding parent-child relationship.

The dimensions of intellective performance as assessed in classroom marks and in standard multi-aptitude tests reduce to the two highly general factors of attainment and aptitude. When the more universal concerns of perception of opportunity, of religious beliefs and of perceptions of the future are added to the array of intellective variables, the mapping of adolescent intellective activity is found to include beliefs about war, social breakdown, religion, means to peace, social leadership, and the possibilities and future use of science. In this more complete cognitive range, aptitude is not as important as are concepts of global survival and societal stability.

The non-intellective variables have been reduced to factor dimensions which are a comprehensive account of adolescent personality in a person-environment framework. The main personality adjustment factors are personal-familial adjustment, and sociability. The major traits are anxiety and problem-centredness. The main motives are to do with practical, computational and science preferences. The main person-environment interaction factors are school environment press and attitude to school. A religion factor exists, with differential socialization functions for males and females.

Conclusions regarding home environment and personality effects are based on regression analyses.

Parental attitudes and parent-child relationships which are interpreted as positively influencing both personality development and academic performance are those involving parental support, low anger, low anxiety, permissiveness, and the clear communication of expectations.

Personality factors of pupils which are interpreted as clearly enhancing academic performance are personal-familial adjustment; literary or aesthetic rather than practical motives; a positive perception of school environment press; and sociability.

Home environment factors have a greater influence on intellective outcomes among high ability students and higher socio-economic levels. General ability has little or no effect on attainment in higher ability and higher socio-economic groups, but is a relatively strong factor in

attainment in lower socio-economic groups. Personality factors other than general ability have the greatest influence on aptitude in higher ability and higher socio-economic groups. Thus the performance of 'advantaged' students is more influenced than in others by home environment and personality factors and less by intellectual factors. The one environment factor particularly affecting high ability pupils, as compared with middle and low, is parental anger-rejection, and the one personality factor affecting them in this performance is that of family relations problems. Low ability pupils, by contrast, are particularly affected in aptitude performance by the personality factor sensitivity - a positive influence. By inference, lower status pupils are receiving less effect of the motivating forces of the home environment.

Sex differences exist in the factors influencing intellectual outcomes. Males are more influenced than females by mother support and by the intrinsic motives of science and computational preferences, while females are influenced more than males by level of father's education.

Though the predominant single influence on academic attainment comes from the aptitude factor, this influence is less than half of what can be explained by the combined effects of home environment, personality and intellectual factors. Almost half of the predictive efficiency of the three sources of effects is interpretable as joint effects, attributable to interactions taking place within the individual. Accordingly, when the amount of influence of intelligence which is mediated by home environment and personality interaction effects is added to the independent influence of the intellectual factor, nearly 90% of total known effect of the predictors is accounted for.

Similarly, though personality factors constitute the largest source of explanation of the selected non-intellectual outcome, conformity problems, the amount attributable to personality factors, independent of other sources of effect, is not quite half of all variance explained. Interaction effects contribute almost half of total effects. Consequently, starting with the individual, personality as an independent factor and as mediated through home environment influences bearing upon the individual, accounts for 96% of the total effects of the predictors. The same process of reasoning, however, shows half of the effects to be attributable to the independent influence of home environment factors with the addition of that mediated through personality.

The two prediction tests show that equal weight is to be given to two sources of influence on outcomes: the dominant predictor, and the interaction effects. The enhancement of intellectual and non-intellectual out-

comes will, however, depend on a theoretical judgment as to the amenability of the two sources of influence to educational modification. In the case of intellectual attainment as an outcome, the question is whether it is more profitable to intervene in the intellectual predictors or in the interaction process. It must be assumed that aptitudes are only partly genetic in origin, and that they are amenable to direct teaching-learning influence. Therefore the attempt to enhance attainment can be pursued by direct modification of the underlying aptitude variables. By this means, the source of nearly one half of the explained variance is being influenced. Secondly, the interaction effect may be influenced in the desired direction by direct efforts to raise the level of those non-intellectual predictors which are known to be positive influences on attainment, and to alleviate the known negative influences. Thirdly, the outcome itself, preferably in conjunction with the first two approaches, may be deliberately modified by teaching. These processes may be expected to change the regression coefficients. The experimental aim would be to control not only for the influence of the predictors already demonstrated, but also for school effects, by inclusion of measurements of teaching-learning processes, with the major hypotheses, (1) that in a selective treatment of one source of variance, an increased amount of variance on the outcome would be found to be due to whichever of the three intervention procedures was experimentally modified - aptitudes, non-intellectual factors, or teaching - and (2) that in the treatment of all known sources of variance simultaneously the proportional interaction effect would increase; (3) that total effect would increase.

The same principles apply to the modification of non-intellectual outcomes. The interaction effects of home environment and personality influences on a given outcome such as conformity are such powerful sources of influence that any attempt at educative intervention would have to deal deliberately with both the major environmental factors and the major personality factors in order to maximize the interaction effect. An example would be to design methods to increase mother support, to decrease father anger-rejection and to increase adjustment to reality in girls in order to reduce conformity problems.

In both the intellectual and non-intellectual outcome problems the key principle which emerges is that of the maximization of interaction effects by the planned modification of those person and environment factors which give rise to them. Thus person and environment, the two sources of influence, are responsibly called into service for educational and humane ends.

The Results Reviewed in the Light of the Literature

Major dimensions of the problem as suggested by related literature are found in chapter 2. Some of these remain to be explored in further analyses of the present set of data. Those which are addressed by the results presented in this report are social class influences, rural-urban differences, culture and race differences, parent-child relations, school environment influences, intellectual characteristics, non-intellectual characteristics, occupational preferences, aspirations and interests, satisfaction and happiness, social-political views, sex differences, delinquency, religion, smoking, personality traits and factors and predictors of school outcomes. In addition, major trends in the literature on multivariate research methods were reviewed in chapter 3.

Social Class Influences. General effects of social class are shown to be similar to those found in overseas studies. There is ample room for Gerrard's distinction between the "upwardly mobile" and the "stationary" poor in America, and Toomey's "stable" and "unstable" poor in England. The general picture is quite as depressing, however, in terms of systematic social-educational-personal deprivation of the lower classes as is that in England or the U.S.A. It is parental education rather than socio-economic status which seems the most important structural background factor in this study. This is in contrast with Bachman's finding for SES. Results of this study confirm Boocock's list of four categories needed to explain the effects of SES: values, childrearing practices, family size, and relationship with teachers. While this study might suggest that private schooling is another factor, there is good reason to believe that there is little effect of private schooling over and above SES effects. In fact some of the regressions indicate that though attendance at a private primary school is related to aptitude in the higher achieving pupils, those of middle ability and of lower SES who had attended private primary schools gained lower attainment scores. Thus a specific effect of private schooling on sub-groups is suggested. As Pidgeon has argued that the schools which select on father's income (the public schools) do not produce as good academic results as those which select on previous pupil attainment (the grammar schools), it may well be that these factors are intermingled in the private schools of the present study. Assuming common features of those who attended private primary school and those attending private secondary school, the conclusion from the regression analyses is that Pidgeon's superior students, if they attended private schools in New Zealand, are of higher aptitude. Thus they are like British grammar school pupils. But those who are of middle ability attained less if they had attended private

school. Again Pidgeon's argument can be adduced: in these students, the effect of being away from home is to deprive them of the motivating effects of the family. It would be expected also, therefore, that all of the residential private school pupils would, over time, show effects of loss of parental motivating influences.

Essentially, then, the force of argument stays with Boocock, and likewise with Wiseman who found that home influences in the form of maternal care and parental attitude to education are of greater significance than social class and occupational level. This is consistent with Keeves also, whose causal analysis indicated that structural characteristics of the home, though moderately correlated with achievement test scores, exerted little direct influence, the effects being mediated through home attitudes.

Though the present study does not provide evidence concerning occupational placement as a correlate of social class, it does demonstrate that lower education of the father is a significant predictor of mechanical preference in boys and of clerical preference in girls, while higher education in the father contributed to science preference in both sexes. While this finding suggests an effect on motives, it must be seen against the fact that the working class pupils expressed highest mobility aspiration. This would not accord with Marriott's English finding that working class children had not internalized the ethic of success through occupational status, but it does bear similarity to his conclusion that working class children have less psychological and social access to available opportunities.

The relationship of social class to mental health and personal well-being is depicted in the literature with varying completeness of explanation, but the general finding is that higher social class is associated with a better general sense of well-being. Most studies fail to take account of the mediating function of interpersonal perceptions in the home and the school. Pidgeon concluded that it was these and not the material and economic conditions which explained social class differences in achievement motivation. This study showed small contributions of family size to conformity problems, and of lower father's education and father absence to adjustment problems. Linear relationship of indices of emotional health with social class are weak. But it has been shown nevertheless, in results reported in chapter 7, that among the negative features of lower social class pupils are less positive attitudes toward teachers, less enjoyment of classes, lower perseverance ratings, more negative view of teachers' regard, lower expectation of opportunity and greater self-reported unhappiness.

The nature and extent of the disadvantages associated with lower

social class are on the whole consistent with overseas findings and lead to similar need for compensatory and preventive programmes.

Rural-Urban Differences. The rural homes represented in the schools are characterized by less education of fathers than the city homes, whereas rural mothers had somewhat better education than did urban mothers. This is consistent with overseas findings. But the major difference between the New Zealand and the American setting is that despite relatively low education of fathers, the rural families are of higher socio-economic status. There is less father absence, and less delinquency, among rural pupils. Urban-rural residency contributed virtually nothing to explanation of intellectual outcomes, but urban residence influenced greater sociability in girls to a small degree, and similarly rural residency contributed to a mechanical preference in boys. Some limitations to social and occupational sophistication may arise in the New Zealand rural pupils, therefore, but no parallel with the stereotype of the American rural poor exists.

Race Differences. The sharp SES effects observed in American blacks by Bachman are found in the New Zealand Maori subgroup. The factor analysis finding that to be Maori is to belong in a large family category is consistent with Bachman's finding that it is SES differences that account for other differences between blacks and whites. The characteristics of the Maori in this study are like those of the poor, i.e. lowest SES. Maoris are marked by lower social class, lower parental education, more mother employment, more fathers absent and fathers deceased, more delinquency, larger families and less pre-school education. But it is to be noted that there is a greater gap in social class structure than that of Pakehas, at least by Non-Maori standards, with proportionately fewer middle-class and more unskilled and semiskilled Maoris than Pakehas. The educational and behavioural difficulties manifested by the Maori are those of his social class, with the exception of the very considerably greater delinquency rate.

Parent-Child Relations. The factor-scales developed by this writer and Mrs. R.A. Coates stand more than adequately alongside important overseas instruments. The findings on major dimensions are in themselves of considerable potential importance in child psychology. Correlations and predictive utility of the scales - Support, Anger-Rejection, Permissiveness-Non-Intrusiveness, Anxiety-Sensitivity, and Demand - support Bachman's conclusions regarding the relationships between parent-child relations and student attitudes. But the strength of prediction of personality adjustment far exceeds anything this writer has reviewed. It is found that the better parental practices go with social advantage; but it is important to note, with Coleman, that when these qualities of relationship exist within poorer homes

the children are likely to be found similar in school performance to those of upper middle class parents. The present results are consistent with those of Heilbrun in regard to the facilitative effects of high nurturance on achievement, and to some degree with his high control coupled with the nurturance. But the control is implied for the present results from the association of achievement with parental expectations of chores. Clarification of the place of permissiveness, found by Elizabeth Chance to be a condition of achievement performance, comes in the factor combining father permissiveness and demand. The facilitative pattern for the New Zealand adolescent achiever appears to be support coupled with a factor of permissiveness in personal life but high demand for social performance.

As in Bachman, there was some indication of a relationship between parent-child relationships and tendency to prefer an ambitious or a mediocre job, the rejecting father affecting less ambitious preferences, the supporting father affecting a science preference.

The large list of outcomes affected by different parent-child relations factors is eloquent explanation of the fact that in the present study, home environment accounted for nearly half the total prediction of attainment and of conformity. These are aptitude, attainment, conformity problems, family relations problems, adjustment to reality, social relations problems, self-sufficiency, sensitivity, sociability, tenseness, perception of favourability with teachers, social interest, medical preference in girls, mechanical preference in boys, clerical preference in girls, and science preference. Since the aptitude is more strongly affected by family relations than is attainment, the parental influence factor appears to have more salience to status on a measure of basic skill than to contemporary adolescent performance. Thus the child-rearing factors have a long-term significance for intellectual development.

Similarly to Bachman's finding that an unvarying decline in I.Q. accompanied increase in family size, this study found many indicators of hampering effects of larger family size. These included lower aptitude in middle ability groups and upper SES groups, and lower attainment in the upper SES group. Larger family size also predicted more conformity problems in girls, more social relations problems in boys and less science preference in boys. The intellectual effects of family size tended to disappear, however, when, in regression analyses, social class variables were included.

School Environment Influences. The school environment factors incorporated in the present report are pupil perceptions and attitudes. A 'school environment press' factor and an 'attitude to school' factor sum up the relevant variables. The major related research for these variables is that of Dale

and of Hargreaves, both in English schools. Consistent with Dale's findings, it was the girls from the two private single sex Protestant schools who gave the lowest rate of positive attitudes to teachers. The whole study tends to be an echo of Hargreaves' findings concerning the class-based distinctions between the achieving and the pre-delinquent. What the present study does in addition is to show that the problems of deteriorative attitudes are contained in the state schools in sharp contrast to the private schools, and that they are rooted in social class origins.

There is evidence of greater parental pressures for achievement in one Catholic boys school than in any of the others. The evidence suggests also that many of the more positive attitudes of higher social classes are concentrated in the private schools, resulting in what appears to be a generally happier school climate. But markedly positive attitudes are found in the newer state school, which has the largest proportion of working class pupils, thus tending to break the equation between social class and school climate.

Pupil Characteristics. A great deal of the present study has been devoted to the factorial definition of pupil characteristics. The intellectual factors do little to demonstrate the existence of a new style of life, as some writers envisage. But the inclusion of variables concerning perspectives on society and the world has resulted in the clarification of the fact that seniors in the schools have more on their minds than formal attainment and aptitudes. Some of the concerns of the world and society take factorial priority over aptitudes. And it is clear that, as Nesselroade and Baltes argued, there is a whole cultural ecology surrounding the development of intelligence as a part of personality functioning. This study has shown that when that intellectual function is defined as aptitude, from 10 to 18% of it is attributable directly to structural and interpersonal influences of the home background and about 30% to personality variables. About half of the variance accounted for on attainment is attributable to direct and interaction effects of home environment and personality. Less than half of the known effects on attainment are attributable to the direct influence of intellectual aptitudes; the rest is made up by the interaction of aptitudes with home environment influences and personality variables. It appears from this study that, as Bachman and others have shown for U.S. high school students, the explanation of attainment is attributable more to person-environment interactions than to direct intelligence.

Non-intellective characteristics are discussed in a wide range of literature. This study has demonstrated marked variation on personality

adjustment and self-rated affective states. Attitudes to school vary, as in other countries, according to social class. Occupational preference falls into fewer and simpler categories than are used in American and other surveys. Factors reduced the ten Australian occupational stereotypes to three bi-polar choices involving science, practical and clerical occupations. The first lined up with academic ability, the other two with less ability and a less helpful home background. The danger of unrealistic choices, as put forward by Venables in England, is no doubt real here, for it is highly unlikely that the fact that a pupil prefers a science occupation is more than an indication of his enjoyment of or aspiration to a prestigious pursuit. It is this which is reflected in the fact that the science preference factor comprises the science preference scale plus two aspiration variables. Happiness, and enjoyment of classes were found, as in American studies, to be primarily a function of socio-economic status, with one private school and rural students happiest, and delinquents and lowest SES unhappiest. A marked sex difference, not mentioned in the literature, was found in the enjoyment of mathematics, boys enjoying it most and the most negative being girls of private schools.

Results of the factor analysis on perceptions of social and world affairs in the year 2,000, though not directly comparable to other studies of national patterns of political thought in youth, do clarify the fact that a marked fear of disaster exists. This is not unlike the tendency noted by Adelson and by Bush in German youth toward an emphasis on law and order and the avoidance of disagreement and confusion.

Sex differences. Certain differences of the kind found in the literature are reported in the present study. Males are more likely to be delinquent, more often expect parental anger in response to school failure, express more upwardly-mobile attitudes, are less likely to do household chores, have lower primary school reading and arithmetic attainment, lower perseverance ratings, enjoy mathematics classes more, express more disbelief of religious statements and are less influenced by the relationship of support with their mothers in adjustment to society. These findings are consistent with those in the literature expressing the higher activity demand, intrinsic motivation and abstract reasoning ability of males, and the greater social dependency, verbal fluency and conformity of females. They concur more, however, with Flanagan's views regarding the interest basis of sex differences than with the stronger implication of innate differences as in Garai and Scheinfeld. The differences are of very much the same kind and order as those found by Keeves in Canberra and on the basis of which he concluded that there was little need for separate analyses of boys and girls.

Delinquency as described in these findings is a complete validation of the views expressed by Oram and by Hanan on the social conditions giving rise to delinquency in New Zealand. Whereas Schumacher found delinquents of low self esteem, this study finds negative attitudes to teachers and marked unhappiness. The findings place the genesis of delinquency in the social conditions of the child and adolescent, and suggest that Wall's recommendation for English schools is valid for New Zealand - that constructive work can and should be done in the schools.

Religion in this study supported earlier findings of this researcher suggesting that conforming, but responsible and diligent character tended to go with religious practice and belief. Religion is, as Dunn found in the U.S.A., a component of careful socialization, and in the students studied coincides on the whole with higher social class attitudes. But its function is not as facilitative as in Dunn's report, for while in boys it supports achievement and ambition, in girls it is part of a pattern of a more submissive social style.

Smoking, as in Hargreaves' English study, is a mark of more delinquent and lower lower social class pupils. But its wider acceptance by parents of seniors makes it a habit of somewhat less derogatory meaning than that of delinquescence as in Hargreaves.

Personality traits as described in other factor-analytic studies, bear enough general similarities to those extracted in this study to encourage an assumption of their wider generality. They are derived from variables much more like those of Sumner and Warburton than those of Hundleby and Cattell. Of the factors found by Sumner and Warburton - (1) scholastic aptitude, (2) commitment to school-work, (3) scientific vs aesthetic temperament, (4) self-sufficiency vs extraversion, (5) literary-arts bias, (6) concerned home climate, (7) outdoor bent, (8) literary vs technical bias, (9) resilience, (10) appreciation of human relationships - almost all are replicated, either in the personality factors, or the intellectual factors, or in the family relations factors, of this study. In addition, this study provides certain valuable intellectual factors outside of the usual formal ones. These include religion and future world views. Of equal importance are the factors of adjustment, school environment, anxiety, and attitude to school. Factors found by Bloom in the self-report variables of Bachman's national study are of similar kind also. Bloom's concept of a generalized distress response may have some relevance for this study, but in view of the fact that personal-familial adjustment is the major factor for juniors and for boys, while anxiety is the primary factor for seniors and for girls, it seems that the factors are more diagnostic than

Bloom might suggest.

Some Interpretations and their Implications for Education

This study has concentrated on home-environment and personality as predictors and has shown that interaction of these is of very important explanatory potential for both intellectual and non-intellectual outcomes of education.

Although the discussion has at different points had overtones of causal assumptions, it must be conceded that no evidence of causation can arise from the research design used. It is claimed, however, that where both the results of the study and the general knowledge of the researcher converge, added confidence is given to the theory and its application. Results of this study have given consistent support to the needs-press theory of person-environment interaction which was assumed as a general theoretical framework. Consequently it is considered by the researcher to be not unreasonable to interpret the results as meaning, among other things:

- (1) that individuals depend upon the interpersonal environment for the satisfaction of psychological needs;
- (2) that the basic interpersonal conditions which satisfy needs are to a large degree incorporated in those home environment factors the influence of which has been assessed in this study;
- (3) that the effects of the provision of basic interpersonal conditions are internal in the individual personality;
- (4) that any attempt to modify individual personality must be planned in recognition of the dependency of the individual upon the basic interpersonal conditions;
- (5) that environments other than the home can serve to meet psychological needs;
- (6) that the personality traits, adjustments, motives and abilities of individuals are consequences of the interactions of the interpersonal environment and the unique need-state and capacities of the individual;
- (7) that characteristics of a desirable nature in individuals can be enhanced by the provision of the interpersonal conditions which have been shown in this study to relate positively to the presence of those characteristics and by the minimization of those interpersonal conditions which have been shown either to detract from desirable characteristics or to increase undesirable characteristics.

In brief it is assumed that the variables related to socially important outcomes in this study may be experimentally assumed to be effective agents in those outcomes.

Parental educational level has proved a useful predictor of desirable outcomes. A community education project could be a practicable alternative to attempting to raise the formal educational level of parents. Not only would parents conceivably be better equipped as a result but their example could be a positive

influence on their children. This proposal receives further attention below.

Large Family size is an impediment to both academic and personal development. This is not to overlook the fact that parent-child relations vary greatly in both smaller and larger families. But the evidence of this study suggests that on the whole it would be beneficial to children not to be in 'large' families, i.e. beyond six children. The results of the study do not show that undesirable effects increase with every child beyond two. The primary finding is that families of more than six children tend to be associated with lower socio-economic status, and it is this dual circumstance which is very often harmful. But larger family size also depresses performance in the upper SES group and relates to conformity problems in girls, social relations problems in boys, while depressing science preference in boys.

Early education of children should receive urgent attention. The features of early education which differentiate those who appear to be receiving more benefit from their total educational experience are pre-school education and better primary school reading and arithmetic levels. The most beneficial procedure for the amelioration of major stumbling-blocks to pupils at secondary school level would be to adopt a major early education policy. This policy should provide that all pupils in the normal range of abilities have reached some minimal level of competency in reading and arithmetic before entry to secondary school.

While there are other aspects of the structure of the earlier education and socialization of secondary school pupils which could bear attention, especially those affecting the social-emotional education of pupils in the primary schools, this study has not attempted to identify these.

Certain processes within the secondary schools have general implications for the organization of secondary education. These are those which involve attitudes and needs of special groups. It is implied that girls need special help to overcome dislike of mathematics and science. This appears to be rooted in the sex differences in ways of thinking as much as in the different value placed on these attainments by boys and girls. It is also in part a reflection of the fact that in mixed classes girls are more easily discouraged by competition in these subjects. Attention should be given to the methods of teaching mathematics and science to girls.

The same implication arises in regard to the students of lower attainment levels. From the fact that his ability is less influenced by personality factors and home relationships it is implied that some general quality of these has depressing effects on the ability of this group as a whole. This is seen by the investigator as endemic for the less able

group, in which the appropriate response by the school should be to give attention to the motivating and motivational factors which are not being utilized. The general implication is that the school should develop an approach, in the case of lower ability pupils, which will enhance constructive motivation. Specifically, this means the provision of compensatory human relations training in the curriculum. Since the results indicate that about half of the explainable outcomes on most major variables, whether intellectual or non-intellectual, is attributable to person-environment interactions within the individual, it is impossible to carry out education as though it were a simply cognitive process. Procedures designed to influence outcomes should be salient to the needs of known groups. A classroom procedure designed to be effective given the assumption that pupils are well-motivated will fail to reach the poorly motivated. A policy which provides better interpersonal relationships for the achieving, as in the higher forms, and academic classes, but more impersonal, directive communication to the less able, will fail both groups to a significant degree. For the achieving are already positively motivated by their home environment and personality traits, and may be expected to have a primary need for effective, action-oriented teaching. The poorly achieving, on the other hand, are deficient in their non-intellectual functioning. It is not their intellectual functioning, but their personality functioning, dependent as it is on their personal environment, which is the primary deficiency. The reasons for the apparent failure of the schools to provide the needed human relations conditions for such pupils are not difficult to conceive. The pupils who are better at interpersonal communication provide reinforcement to teachers, thus strengthening the contact-seeking behaviours of teachers. Those pupils who are poorest, i.e. most distorted, hostile, incompetent, depressed, etc., in their interpersonal communications provide the most frustrating interpersonal situation for teachers, thus discouraging the development of teacher behaviours of helpful communication. At the same time the teachers are less likely to press the academic side with those who are already achieving, and more likely to press it with the poorly achieving. As a result, the achieving group receives more of what it already has, namely interpersonal support, and less of what it needs, namely academic demand. Poor achievers by the same process receive negative or deficient treatment in the very area in which they are deficient, namely facilitative relationships, while they are demanded to do that for which their motivational state is not adjusted, namely academic work. They are motivated for defence, for counter-aggression and for flight, as their personality adjustment and attitudes, and perceptions indicate. The task for the school is the very difficult one of ensuring that its influence on the pupil accomplishes or pro-

vides two things, in their right order. The first thing is the provision of the primary facilitative core of conditions of healthy personality functioning. This is at a premium in the most poorly achieving. The same could be said for other stereotyped groups such as delinquent, pre-delinquent, lower socio-economic groups and non-readers. The very fact that a recommendation that compensatory human relations training be introduced appears problematical if not impracticable is itself indicative of the failure of the schools to be organized to do effective work in this area. The second necessity is that for effective instruction. If the first is provided, the second is attainable.

The next recommendation, therefore is that, in view of the above, and recognizing that personal-familial adjustment problems and their academic consequences constitute a major outcome of the total education and socialization process, school teachers should be provided systematic training in the human relations abilities needed to facilitate desirable adolescent adjustment. This suggestion is directed to several key professional activities. If human relations training is to be part of the preparation of teachers, it should be incorporated systematically in the teachers college programme. Then it should be adequately provided for in in-service training. The brevity of in-service training courses as practiced could scarcely provide adequate conditions for human relations training. The best provision could be that of human relations trainers who could serve districts and provide specialist courses, preferably maintaining on-going programmes within school staffs. The alternative or corollary to the appointment of human relations trainers in districts is that this role be played by a guidance counsellor. In carrying out the role, the guidance worker or the district human relations trainer for the schools would be responsible to provide two things above all: opportunities for teachers to grow as individuals in their professional capacity to be facilitative and generative persons in their influence upon each other and upon pupils; and a strengthening of the ability of the school to promote its goals through programmes •carried out by teachers. The teacher helps the pupils best by facilitating their own growth; the trainer or guidance counsellor helps teachers best by facilitating their ability to be effective with pupils.

The influence of the home on both personality adjustment and abilities of pupils implies that parent education should be undertaken to accomplish two things: the greater cooperation of the schools and the homes in the pursuit of school learning, and the training of parents in interpersonal relations. It has already been shown by Keeves (1972) that the degree to which parents collaborate with the school in the use of reading resources

and in the encouragement of homework is a significant contribution to attainment in science. The present investigator has shown that parent-child relations form a major factor interacting with formal abilities and personality to influence intellectual and non-intellectual outcomes. The qualities of interpersonal relationship identified in this study as primary influences on secondary pupils' growth are similar to those proposed in the literature on helping relationships as basic dimensions which explain personality functioning as an interpersonal learning outcome. (Carkhuff, 1969) This researcher recommends that it be recognized, therefore, that in New Zealand society as reflected in the sample of adolescents studied, there is wide variation in parental qualities essential to children's learning and emotional health. In the short term these qualities should be enhanced by well organized parent education programmes of a community-wide kind. In the long term, the ability to provide helpful human relations could be seen as educational goals and outcomes. Thus the circle is complete. The human qualities which will facilitate children's growth should be developed in the parents of tomorrow's children. To do this, the teachers of today's children, and the schools in which responsibility for human enrichment is vested, must become potent communities of rich human relations.

It is the very pupils who are, as a group, most deprived of such helpful conditions whose parents are least able to rise to the challenge thus posed. For this reason, helping the deprived becomes a community responsibility. The final recommendation of this researcher therefore, is addressed to the community in which the pupils reside. Many of the educational advantages enjoyed by individual families which have greater resources could be made available on a community-wide basis. Some of the features of such a plan may be suggested.

There should be a very close articulation of compulsory schooling with tertiary training and with the wider world of work and service. The kinds of information gathered on the pupils of the schools of this study would provide an adequate basis for an effective, ongoing school and community guidance programme. In such a programme not only the necessary assessment of educational and personal needs could be made but also careful links could be established between occupational preferences and abilities on the one hand and opportunities for employment and further training on the other. There is a connection between personal adjustment and social competency, including occupational success, and it behoves a community to ensure that its young people are given every kind of opportunity they need to accomplish personally satisfying entry into the world beyond school.

An important feature of such a community plan would be a community college, which would incorporate features of locally relevant polytechnical

training as well as general pre-vocational academic studies. Much of the loss of human resources from the community could be remedied if there were this opportunity in a sub-degree community college to test interests, to explore the implications of the vocational interests which have emerged in school and to test ability to accomplish advanced studies. Many capable young people who at present leave the community for training perhaps never to return, or who are frustrated by the lack of further educational opportunity in their own community could with benefit to themselves and to the community be provided the flexible part-time or full-time study thus afforded.

A major advance in the integration of the whole life of the community could be made, therefore, if the following innovatory steps were taken:

- (1) Pre-school education development to provide early equalizing opportunities for the potentially disadvantaged;
- (2) Special attention in the primary schools to the reading levels of the potentially disadvantaged;
- (3) Incorporation, in secondary schools, of a systematic human relations training component, for both teachers and pupils;
- (4) Organization of compensatory parent-education in general subjects and in family life and human relations;
- (5) Establishment of a community college, to provide the necessary continuing opportunities for school leavers, and the parental education programmes noted in (4);
- (6) Establishment of a community-wide guidance programme, to provide a linkage between the schools and the world of work, and to provide an evaluation and guidance network within the schools.

In these steps, which are fully within the grasp of the community, lie the beginnings of what, with continued careful imaginative work, could be a great creation, an educative community.

Limitations

A note on limitations to these conclusions is in order. The substantive conclusions are deterministic rather than statistical. This means that within the limitations of measurement the findings are a description of actual characteristics of groups and the relationships among environmental and personal variables. Limitations on action to be based on the findings are best based on a decision as to the importance of a difference, a frequency or a relationship. The researcher has ignored a great many lesser relationships among variables and has based recommendations on those which reveal the existence of processes which contribute importantly to the

life-success of individuals. Suggested action based on these major findings has been outlined in general terms. Details should be carefully worked out in the form of hypothesis-testing proposals of the epidemiological kind discussed earlier. By planning procedures and systematically observing carefully assessed outcomes in pre-post analyses, and utilizing control groups, it should be possible to begin to accumulate evidence by which effective procedures could be identified. Thus a self-correcting evaluation procedure could be developed which would, with commitment by all concerned, be highly rewarding to the whole community. The limitation to be stated, then, is that there can be no guarantee that an experiment involving human input will be successful. But it can be affirmed that given helping persons such as parents and teachers who have certain primary qualities and abilities, positive change in learners will follow.

Further research

It is the experimental action research just referred to which is the further research to which this study points. In an earlier chapter (p97) some of the needed theoretical further research was listed. It is the belief of the present investigator, however, that the most productive research approach is that in which understanding and action follow and inform each other. For theory, like intelligence, is only partly a pure entity. As pure ideal it has no substance. Its test is in practice, where it stands exposed to the question 'Has it led to human benefits?' The enemy of good theory is inaction. It is to action and further honest appraisal that the present contribution to understanding points.

APPENDICES

APPENDIX A

RESEARCH FORM OF PARENTAL PRACTICES SCALES

Appendix A

RESEARCH FORM OF PARENTAL PRACTICES SCALES

(R.A.F. Coates and A.C. Webster, 1971)

'Mother' Questionnaire *

Scale I SUPPORT-UNDERSTANDING

- 36. She makes me feel she is there if ever I need her
- 46. She can find the best way out when I have a problem
- 57. I can tell her a secret quite safely
- 60. She understands if I feel bad about something
- 78. I feel she understands what kind of person I am
- 95. She listens to my ideas

Scale II ANGER-REJECTION

- 51. She yells at me when she tells me off
- 98. She gets angry very quickly
- 118. She expects me to tell her exactly how I spend my pocket money
- 113. She gets wild if I shout at her
- 100. I feel she will be relieved when I grow up
- 84. I worry about whether she'll be in a bad mood
- 87. My mother and I quarrel
- 91. My mother can make me feel silly by making fun of me

Scale III PERMISSIVENESS-NON-INTRUSIVENESS

- 79. She lets me decide what time to go to bed
- 6. If I do well, she rewards me with money
- 59. She likes to do everything for me
- 108. She lets me stay up late
- 110. She lets me choose my own clothes
- 92. She lets me settle my own rows

Scale IV ANXIETY-SENSITIVITY

- 65. Her feelings are easily hurt
- 89. She worries that she is not very good at bringing up children
- 48. She gets upset if Dad disagrees with her
- 38. She worries that I can't take care of myself
- 14. She gets upset very easily
- 12. She likes to know what I am doing

*'Father' Questionnaire is exactly the same but with pronouns changed.

Scale V DEMAND FOR ACHIEVEMENT

- 37. If I don't do well at school I know she is disappointed
- 20. I feel as if my parents are pushing me to do well
- 33. She tells me to work hard at school
- 62. She teaches me things she thinks I need to learn
- 81. She says she hopes I won't let her down
- 88. She thinks it is important always to be dressed neatly

APPENDIX B

FACTORS OF THE GENERAL SOCIAL ENVIRONMENT

Table B.I: Oblique Primary Factors of the General Social Environment: All subjects

Variable	Loading on Factor						h^2
	I	II	III	IV	V	VI	
UR	.06	-.91	.01	-.05	-.03	.06	.795
PSE	.11	-.46	-.13	.34	-.01	-.04	.410
CPS	.01	-.91	-.06	-.05	.00	.09	.789
NSSA	-.00	-.15	-.82	-.11	.12	.05	.615
ISA	.01	-.44	.64	-.09	-.12	-.07	.656
SES	-.50	-.16	.13	-.20	.22	-.12	.603
FED	.89	-.17	.05	-.07	-.02	-.06	.754
MED	.77	.09	-.01	-.01	.15	-.11	.590
MEM	-.06	-.12	-.03	.26	.53	-.29	.539
FPA	.09	.13	.04	-.10	-.17	-.91	.769
FPH	.04	.07	-.16	-.01	.88	.24	.687
RM	.10	.04	.00	-.63	.21	-.22	.502
FS	-.01	-.13	-.19	-.80	-.18	.02	.650
RLF	-.14	.02	-.45	-.10	-.24	-.28	.369
RLPF	.02	-.12	-.71	-.21	.05	-.00	.481
Percent Variance in Factors	16.21	13.45	9.82	7.73	7.24	6.85	
Cumulative Percent of Trace	16.21	29.66	39.48	47.21	54.55	61.40	

APPENDIX C

FACTORS OF FAMILY RELATIONSHIPS

Table C. II: Oblique Primary Factors of Family Relationship Variables: Males

Variable	Loading on Factor						h^2
	I	II	III	IV	V	VI	
PA1	.08	-.04	.16	.08	-.07	.76	.530
PA2	-.00	.05	.01	-.12	-.04	.72	.520
PA3	-.21	-.01	-.10	-.54	.26	.15	.391
PA4	.12	-.03	-.00	-.16	.74	.06	.510
PA5	.12	.10	.11	.13	.79	-.13	.620
FW	-.45	-.11	.09	.07	.20	-.10	.375
RPF	-.70	-.03	.10	.01	.07	.05	.585
RPM	-.89	.04	-.02	-.20	-.11	-.04	.657
FRP	-.80	-.04	.04	.08	-.04	.00	.670
FRM	-.93	.02	-.05	-.07	-.22	-.01	.698
PPM1	-.58	.09	.01	.18	.17	-.09	.567
PPM2	.14	-.01	-.74	-.10	.08	-.05	.635
PPM3	-.03	.71	.06	.01	-.10	.04	.521
PPM4	-.01	.82	.00	.01	.05	-.02	.688
PPM5	.00	.84	-.08	-.09	.03	.00	.683
PPF1	.00	.80	.04	-.05	.06	.01	.683
PPF2	.01	.00	-.93	-.08	-.04	-.09	.846
PPF3	.03	-.02	.02	.84	.03	-.00	.699
PPF4	-.05	.02	-.87	.15	-.11	-.01	.744
PPF5	-.20	-.00	-.30	.47	.17	.28	.620
Percent Variance in Factor	20.34	13.02	10.96	6.11	5.49	5.30	
Cumulative Per- cent of Trace	20.34	33.36	44.32	50.43	55.92	61.23	

Table C. III: Oblique Primary Factors of Family Relationship Variables: Females

Variable	Loading on Factor							h^2
	I	II	III	IV	V	VI	VII	
PA1	-.12	.00	.06	.01	.06	.00	.93	.849
PA2	.27	-.04	.07	.13	.49	-.18	.28	.498
PA3	-.16	-.09	.03	-.48	.90	.07	-.02	.654
PA4	.03	.09	.08	-.10	-.01	-.95	-.00	.861
PA5	-.42	-.16	-.10	-.06	-.21	-.39	-.09	.448
FW	-.65	-.07	.02	-.06	.20	.07	-.03	.464
RPF	-.56	.03	.16	.28	.26	.00	-.19	.695
RPM	-.86	.10	-.15	-.13	.05	-.01	.05	.654
FRP	-.61	.06	.20	.24	.15	-.01	-.13	.668
FRM	-.82	.10	-.02	-.03	.00	-.01	.12	.648
PPM1	-.82	-.10	-.07	.03	-.22	.03	.13	.707
PPM2	.47	.03	-.43	.11	.21	-.09	-.14	.668
PPM3	.09	-.66	.15	.13	-.08	-.06	-.02	.497
PPM4	-.01	-.83	-.04	-.11	.12	.03	.00	.670
PPM5	.05	-.90	-.02	-.01	.07	.07	.03	.782
PPF1	.03	-.84	-.02	.06	.00	.01	-.03	.706
PPF2	.10	-.01	-.88	-.16	.02	.00	-.06	.838
PPF3	.04	-.00	.10	.92	-.43	.08	-.01	.687
PPF4	-.11	-.01	-.95	.08	-.10	.08	.01	.810
PPF5	-.28	-.03	-.39	.55	.08	-.01	.11	.626
Percent Variance in Factor	21.59	13.53	9.90	6.27	5.68	5.11	5.06	
Cumulative Percent of Trace	21.59	35.12	45.02	51.29	56.97	62.08	67.15	

APPENDIX D

FACTORS OF FUTURE WORLD ORIENTATION

Appendix D

THE FUTURE WORLD ORIENTATION QUESTIONNAIRE
(THE WORLD IN THE YEAR 2,000)

D.1. The ScalesA. Extent of Future Awareness

1. Would you say that you think much about the future of your country, not in a couple of years, but, say, in the year 2,000?
2. Would you say that you think much about the future of the whole world, not in a couple of years, but, say, in the year 2,000?
3. Some people feel that the year 2,000 is far away in the distant future, others feel it is rather close at hand. What do you feel?
4. How often would you say that you talk with somebody about the future of your country or the world?
5. How often would you say that you see or hear about the future of your country or the world in radio or T.V.?
6. How often would you say that you read about the future of your country or the world in a newspaper or in a book?

B. Self-World Optimism

(Here is a ladder where the top (9) represents the best possible life for you and the bottom (1) the worst possible life for you. Using the ladder -)

7. Where do you feel that you stand at the present time?
8. Where do you think you will stand Five years from now?
9. And where do you think you will stand in the year 2,000?
(Here is a ladder where the top (9) represents the best possible future for your country and bottom (1) the worst possible future for your country. Using this ladder -)
10. Where do you feel that your country stands at the present time?
11. Where do you think it will stand Five years from now?
12. And where do you think it will stand in the year 2,000?
(Here is a ladder where the top (9) represents the best possible future for the world, and the bottom (1) the worst possible future for the world. Using this ladder -)
13. Where do you think that the world stands at the present time?
14. Where do you think it will stand Five years from now?
15. And where do you think it will stand in the 2,000?

C. Change Toward Interiority

(What do you think will be the situation in your country by the year 2,000? Do you think that -)

16. People will be more happy or less happy than they are today?
17. People will be more interested or less interested in inner experiences and inner life than they are today?
18. People will enjoy their work more or less than they do today?
19. People will believe more or believe less in their religion than they do today?
20. People will be more interested or less interested in material things like cars, etc. than they are today?
21. People will be more interested or less interested in social success than they are today?
22. People will be more kind or less kind to each other than they are today?
23. People will be more interested or less interested in having really good friends than they are today?

D. Change Toward Family Breakdown

24. There will be more sexual freedom or less sexual freedom for young people than there is today?
25. People will be more attached or less attached to their families than they are today?
26. There will be more divorce or less divorce of marriages than there is today?

E. Change Toward Greater Leisure

27. People will have more leisure or less leisure time than they have today?
28. There will be more unemployment or less unemployment than there is today?

F. Homogenization of Society

29. People will be more similar or less similar to each other than they are today?
30. There will be more difference or less difference between people high up and people low down in society than there is today?

G. Mental Health Breakdown

31. There will be more mental illness or less mental illness than there is today?
32. There will be more use or less use of narcotics and drugs than there is today?
33. There will be more criminality or less criminality than there is today?

H. Change from Adult Male Leadership

34. It will be more common or less common to have women in leading positions than it is today?
35. It will be more common or less common to have young people in leading positions than it is today?
- (This is what you think will happen by the year 2,000. For some of these questions we would also like to know what you hope will happen. Do you hope that -)

I. Hope for Interiority

36. People will be more interested or less interested in inner experiences and inner life than they are today?
37. People will believe more or believe less in their religion than they do today?
38. People will be more interested or less interested in social success than they are today?

J. Hope for Non-Breakdown of Family

39. There will be more sexual freedom or less sexual freedom for young people than there is today?
40. People will be more attached or less attached to their families than they are today?

K. Hope for Non Male Adult Leadership

41. It will be more common or less common to have women in leading positions than they are today?

L. Hope for More Urbanization

42. There will be more people or less people living in cities than there are today?
43. There will be more people or less people having manual jobs than there are today?

(We would like to know what you feel about the possibilities of science in the year 2,000. Do you think that -)

M. Disbelief in Scientific Control

44. I think that in the year 2,000 scientific knowledge will make it possible to decide in advance the sex of one's child.
46. I think that in the year 2,000 scientific knowledge will make it possible to decide in advance the major features of the personality of one's child.
48. I think that in the year 2,000 scientific knowledge will make it possible to cure dangerous diseases like cancer.
50. I think that in the year 2,000 scientific knowledge will make it possible to decide in advance the major economic development of a country.

52. I think that in the year 2,000 scientific knowledge will make it possible to organize the world so that there will be no wars.
54. I think that in the year 2,000 scientific knowledge will make it possible to decide in advance what the weather will be.
56. I think that in the year 2,000 science will make it possible to go to other planets.

N. Disapproval of Scientific Control

After each of the 7 questions in M above, the question "Would you like scientific knowledge to make this possible?" is asked. Scale N is the sum of the answers to these 7 questions.

O.1 Disarmament

58. Thinking of war, armament and disarmament, what do you think the world situation will be like in the year 2,000? Will there be world war, more armament, about as now, partial disarmament, total disarmament?

O.2 N.Z. Escape War Damage

59. What do you think would be the result for your country if it was involved in a third world war - total destruction; irreparable losses; heavy, but not irreparable losses; not so heavy losses?

O.3 N.Z. Involvement in World War

60. If there was a world war, do you think your country could stay out of it?

O.4 Big Power Starts War

61. If there was a world war, how do you think it would be most likely to break out: by accident, by extension of a limited conflict, or by a big power attacking another big power?

O.5 Inevitability of War

62. Do you think that man can learn how to avoid war, or is it not in man's power to prevent war?

O.6 No Justification Non-Nuclear War

63. Could you imagine any value, goal or ideal that could justify a war without nuclear weapons?

O.7 No Justification Nuclear War

64. Could you imagine any value, goal or ideal that could justify a war with nuclear weapons?

(....proposals about how permanent peace can be obtained in this world....)

P.1 Disbelief in Peace coming through Changed Persons

65. To obtain peace people must become more religious all over the world.

- 66. To obtain peace one has to start with the single individual everywhere and make him less aggressive.
- 67. To obtain peace one must create more peaceful relations in the family, the school and at work.

P.2 Peace through Abolition of Inequity

- 68. To obtain peace the colonial system must be abolished all over the world.
- 69. To obtain peace hunger and poverty must be abolished all over the world.
- 70. To obtain peace it must be possible for people to choose their governments freely all over the world.
- 71. To obtain peace all countries must stop completely from intervening into the internal affairs of other countries.
- 72. To obtain peace countries must be (politically, economically, socially) more similar to each other than today.
- 73. To obtain peace an economy based mainly on private ownership must be introduced all over the world.
- 74. To obtain peace developed countries must give much more technical assistance and aid to developing countries than they do today.
- 75. To obtain peace an economy based mainly on public ownership must be introduced all over the world.
- 76. To obtain peace the gap between the poor and rich countries must disappear.
- 77. To obtain peace an economy based on a mixture of private and public ownership must be introduced all over the world.

P.3 Peace through Military Strength

- 78. To obtain peace countries must be members of military alliances so that no country or group of countries dare attack others.
- 79. To obtain peace we must have general and complete disarmament as soon as possible.
- 80. To obtain peace countries must withdraw from military alliances.
- 81. To obtain peace countries will have to keep national armies.

P.4 Peace through Non-Aggressive Co-operation

- 82. To obtain peace countries should have less to do with each other and become self sufficient.
- 83. To obtain peace we must have increased trade, exchange and co-operation also between countries that are not on friendly terms.
- 84. To obtain peace we must improve the United Nations so as to make it more efficient than it is today.

85. To obtain peace we must have a strong international police force that can stop aggression from any country or group of countries.
86. To obtain peace we must have a world state with disappearance of national borders and an efficient world government.

P.5 Self-Role in Peace Realization

(In reference to selected best peace proposal)

88. Do you think there is anything you yourself can do to contribute to the realization of this proposal?
89. Do you think this proposal will be realized by the year 2,000?

Q.1 War Between Capitalist and Socialist

90. Between now and the year 2,000, what do you think is most likely to happen in the relation between capitalist countries and socialist countries?
1. The major differences between the two systems will disappear.
 2. They will accept the differences and live in peaceful co-existence.
 3. They will have major conflicts but not war.
 4. There will be a war between them.

Q.2 War Between Rich and Poor

91. Between now and the year 2,000, what do you think is most likely to happen in the relation between rich countries and poor countries?
1. The gap between the poor and the rich countries will disappear.
 2. They will accept the differences and live in peaceful co-existence.
 3. There will be major conflicts but not war.
 4. There will be a war between them.

Q.3 War Between Races

92. Between now and the year 2,000, what do you think is most likely to happen in the relation between the different races of the world?
1. People will forget about the differences between the races.
 2. They will accept the differences and live in peaceful co-existence.
 3. There will be major conflicts but no war.
 4. There will be a war between them.

R. Activism - Optimism

93. However much the external conditions are changed it is the moral qualities of man that really count.

94. Everything is changing so rapidly these days that one hardly knows what is right and what is wrong any longer.
95. The future is so uncertain that the best thing one can do is to take one day after the other.
96. Really fundamental change is necessary if this world shall be a good world to live in.
97. Who do you think has the most realistic view of the world today, the younger generation or the older generation?
98. What do you think is the best thing for you personally to do?
 1. To be concerned with all matters of general interest.
 2. To be concerned only with matters of direct interest to you yourself.
 3. Only to adjust to what happens around you.
99. What do you think is the best thing for your country to do?
 1. To be concerned with matters of interest to all countries.
 2. To be concerned only with matters of direct interest to the country.
 3. Only to adjust to what happens in the world.
100. Are you a member of a political organization?
101. Are you a member of a religious organization?
102. How many organizations altogether are you a member of?

Table D.IV: Factor Analysis of 30 Scales of FW0:
Orthogonal Factor Matrix (Varimax) N = 964 (Seniors Only)

Loading on Factor											
Variable	I	II	III	IV	V	VI	VII	VIII	IX	X	h^2
A	-.12	-.18	-.13	.32	-.10	-.07	.24	-.03	.48	.16	.605
B	.20	-.22	-.04	-.12	-.10	.03	.05	-.55	.14	.11	.554
C	-.41	.08	.09	.03	.08	.19	-.12	.12	.48	.23	.549
D	.03	-.70	-.15	.05	.07	.05	-.06	-.05	.01	-.06	.547
E	-.08	-.48	-.08	-.31	-.03	.02	-.13	-.11	.36	.09	.534
F	-.09	-.52	.13	.13	.10	.02	.04	-.05	.01	.20	.449
G	.06	-.70	.15	.17	-.08	.08	.05	.04	-.09	-.13	.586
H	-.03	-.13	.05	.10	-.01	.76	-.05	-.09	-.03	-.10	.629
I	.00	-.09	.68	-.11	-.01	.18	-.02	.07	.20	.15	.599
J	-.12	-.14	-.58	.08	.33	.08	-.04	.02	-.04	.26	.589
K	-.07	-.02	-.00	-.08	.18	.72	.08	.07	.06	.03	.586
L	-.01	-.09	.70	.15	.08	-.05	-.09	-.10	-.12	.13	.580
M	-.09	.02	-.03	.01	.70	.14	.03	-.02	.01	-.02	.524
N	-.05	-.02	-.07	.08	.70	.09	.12	.04	.04	-.12	.560
O.1	.06	-.29	.05	.34	.04	.04	-.05	-.44	.07	.04	.419
O.2	-.21	.14	.07	.05	.06	-.02	.06	-.72	-.10	.05	.608
O.3	-.15	.03	.06	.47	.13	.01	-.01	.13	.08	.11	.307
O.4	-.25	-.14	.05	-.03	.32	-.13	-.22	-.17	-.15	.22	.382
O.5	-.20	-.13	.14	-.04	.39	-.26	.27	.07	.16	.01	.484
O.6	.07	.00	.12	.24	.28	.01	-.28	-.02	.48	-.21	.592
O.7	-.00	.03	-.13	.46	.33	-.10	-.42	-.19	.19	-.05	.646
P.1	.11	.12	.32	-.23	.02	-.07	.17	-.15	.43	-.25	.505
P.2	-.05	-.03	-.03	-.02	.13	.01	.39	.10	-.01	-.59	.553
P.3	.02	.05	-.06	.09	.17	.00	.63	-.11	-.00	-.04	.658
P.4	-.13	.00	-.09	-.20	.04	.07	-.14	.05	-.01	-.65	.582
P.5	-.02	-.23	.04	.64	-.08	-.02	-.00	-.03	-.06	.02	.522
Q.1	-.62	-.14	-.06	.04	.22	-.08	.05	.06	.01	.08	.518
Q.2	-.69	.09	.04	.04	-.03	.07	.02	-.06	.09	-.14	.535
Q.3	-.72	.00	-.08	.08	.06	.07	-.03	-.03	-.03	-.08	.574
R	-.05	-.07	-.22	.55	.03	.11	.23	-.18	.07	.23	.517
Percent Variance in											
Factors	9.78	7.15	5.71	5.19	4.53	4.08	3.88	3.65	3.49	3.42	
Cumulative Percent											
of Trace	9.78	16.92	22.73	27.91	32.44	36.52	40.40	44.05	47.54	50.96	

APPENDIX E

TABLES OF CHARACTERISTICS OF PUPILS IN SPECIAL GROUPS

1

Table E.V: Numbers in Seven Secondary Schools in
Socio-economic Classes
(Percentages in Parenthes)

	SES 1	SES 2	SES 3	SES 4	SES 5	SES 6
Makora N = 485	28 (5.8)	104 (21.4)	55 (11.3)	131 (27.0)	114 (23.5)	53 (10.9)
Wairarapa N = 747	55 (7.4)	241 (32.3)	91 (12.2)	160 (21.4)	146 (19.5)	54 (7.2)
Rathkeale N = 290	46 (15.9)	205 (70.1)	12 (4.1)	18 (6.2)	8 (2.7)	1 (0.3)
St. Josephs N = 209	24 (11.5)	84 (40.2)	29 (13.9)	34 (16.3)	31 (14.8)	7 (3.3)
St. Matthews N = 146	28 (19.2)	102 (69.9)	8 (5.5)	5 (3.4)	3 (2.0)	0 (0.0)
St. Brides N = 158	13 (8.2)	61 (38.6)	12 (7.6)	26 (16.4)	39 (24.7)	7 (4.4)
Solway N = 98	8 (8.2)	78 (79.6)	2 (2.0)	8 (8.2)	1 (1.0)	1 (1.0)
Totals: (N = 2133)	202 (9.5)	875 (41.0)	209 (9.8)	382 (17.9)	342 (16.0)	123 (5.8)

Table E.VI: Numbers in Seven Secondary Schools with
Fathers Education Level
(Percentages in Parentheses)

	FED 1	FED 2	FED 3	FED 4	FED 5	FED 6
Makora N = 485	98 (20.2)	192 (39.6)	132 (27.2)	41 (8.4)	9 (1.8)	13 (2.7)
Wairarapa N = 747	112 (15.0)	285 (38.4)	204 (27.3)	83 (11.1)	27 (3.6)	36 (4.8)
Rathkeale N = 290	15 (5.1)	78 (26.9)	88 (30.3)	32 (11.0)	17 (5.9)	60 (20.7)
St. Josephs N = 209	29 (13.9)	85 (40.7)	47 (22.5)	23 (11.0)	11 (5.3)	14 (6.7)
St. Matthews N = 146	15 (10.3)	40 (27.4)	47 (32.2)	11 (7.5)	9 (6.2)	24 (16.4)
St. Brides N = 158	44 (27.8)	55 (34.8)	35 (22.1)	15 (9.5)	3 (1.9)	6 (3.8)
Solway N = 98	16 (16.3)	26 (26.5)	36 (36.7)	10 (10.2)	5 (5.1)	5 (5.1)
Totals: (N = 2133)	329 (15.4)	761 (35.7)	589 (27.6)	215 (10.1)	81 (3.8)	158 (7.4)

Table E.VII: Numbers in Seven Secondary Schools with
Mothers Education Level
(Percentages in Parentheses)

	MED 1	MED 2	MED 3	MED 4	MED 5	MED 6
Makora N = 485	69 (14.2)	187 (38.6)	179 (36.9)	36 (7.4)	8 (1.6)	6 (1.2)
Wairarapa N = 747	109 (14.6)	300 (40.2)	266 (35.6)	55 (7.4)	9 (1.2)	8 (1.1)
Rathkeale N = 290	8 (2.7)	66 (22.7)	131 (45.2)	53 (18.3)	22 (7.6)	10 (3.4)
St. Josephs N = 209	21 (10.0)	85 (40.1)	80 (38.3)	16 (7.6)	2 (1.0)	5 (2.4)
St. Matthews N = 146	1 (0.7)	38 (26.0)	73 (50.0)	22 (15.1)	7 (4.8)	5 (3.4)
St. Brides N = 158	20 (12.6)	59 (37.3)	54 (34.2)	20 (12.6)	4 (2.5)	1 (0.6)
Solway N = 98	6 (6.1)	30 (30.6)	44 (44.9)	10 (10.2)	5 (5.1)	3 (3.1)
Totals: (N = 2133)	234 (11.0)	765 (35.9)	827 (38.8)	212 (9.9)	57 (2.7)	38 (1.8)

Table E.VIII: Numbers in Seven Secondary Schools from
Selected Life Categories
(Percentages in Parentheses)

	Urban resid.	Pre-school attendance	City primary	Non-state primary	Intermed. school	Mother empl.	Father deceased	Father absent	Maori race	Delinquency detected
Makora	375 (77)	173 (36)	421 (87)	31 (6)	433 (89)	249 (51)	25 (5)	33 (7)	74 (15)	18 (4)
Wairarapa	492 (66)	253 (34)	541 (72)	53 (7)	568 (76)	306 (41)	43 (6)	38 (5)	87 (12)	32 (4)
Rathkeale	170 (59)	143 (49)	201 (69)	128 (49)	70 (24)	80 (28)	13 (4)	7 (2)	24 (8)	3 (1)
St. Josephs	135 (65)	64 (31)	163 (78)	156 (75)	31 (15)	78 (37)	8 (4)	13 (6)	24 (11)	1 (0.5)
St. Matthews	65 (44)	64 (44)	80 (55)	70 (48)	10 (7)	41 (28)	11 (8)	8 (5)	13 (9)	0 (0)
St. Brides	112 (71)	51 (32)	132 (83)	121 (77)	13 (8)	71 (45)	8 (5)	5 (3)	16 (10)	0 (0)
Solway	34 (35)	33 (34)	43 (44)	18 (18)	22 (22)	27 (28)	1 (1)	3 (3)	5 (5)	0 (0)
Total	1383 (65)	781 (37)	1581 (74)	587 (23)	1147 (54)	852 (40)	109 (5)	107 (5)	243 (11)	54 (2.5)

Table E.IX: Numbers of Junior and Senior Pupils in
Selected Life Categories

		Juniors N = 1150		Seniors N = 983	
		Freq.	Percent	Freq.	Percent
Non-state school		278	24.17	309	31.43
Intermediate school		666	57.91	481	48.93
Father deceased		51	4.43	58	5.90
Father absent		68	5.91	39	3.96
Maori Race		157	13.65	86	8.74
Religious Affil. family		1001	87.04	907	92.26
Religious Practice family		439	38.17	433	44.04
Religious Practice pupil		667	58.00	594	60.42
Delinquency		33	2.86	21	2.13
SES	1.	95	8.26	107	10.88
	2.	424	36.86	451	45.87
	3.	108	9.39	101	10.27
	4.	229	19.91	153	15.56
	5.	208	18.08	134	13.63
	6.	86	7.47	37	3.76
Fathers education	1.	154	13.39	175	17.80
	2.	422	36.69	339	34.48
	3.	351	30.52	238	24.21
	4.	118	10.26	97	9.86
	5.	28	2.43	53	5.39
	6.	77	6.69	81	8.24
Mothers education	1.	113	9.82	121	12.30
	2.	393	34.17	372	37.84
	3.	492	42.78	335	34.07
	4.	107	9.30	105	10.68
	5.	28	2.43	29	2.95
	6.	17	1.47	21	2.13
Family size	1.	52	4.52	43	4.37
	2.	167	14.52	140	14.24
	3.	258	22.43	242	24.61
	4.	272	23.65	252	25.63
	5.	155	13.47	143	14.54
	6.	101	8.78	73	7.42
	7+.	145	12.60	90	9.15

Table E.X: Numbers of Male and Female Pupils in
Selected Life Categories

	Male N = 1159		Female N = 974	
	Freq.	Percent	Freq.	Percent
Mother employment	440	37.96	412	42.49
Maori race	153	13.20	90	9.24
Delinquency	36	3.10	18	1.84

Table E.XI: Numbers of Rural and Urban Pupils in
Socio-economic Classes and Parental
Education Levels

		Rural N = 750		Urban N = 1383	
		Freq.	Percent	Freq.	Percent
Socio-economic status					
1.	38		5.06	164	11.85
2.	500		66.66	375	27.11
3.	36		4.80	173	12.50
4.	37		4.93	345	24.94
5.	89		11.86	253	18.29
6.	50		6.66	73	5.27
Fathers education					
1.	152		20.26	177	12.79
2.	280		37.33	481	34.77
3.	211		28.13	378	27.33
4.	46		6.13	169	12.21
5.	36		4.80	45	3.25
6.	25		3.33	133	9.61
Mothers education					
1.	84		11.20	150	10.84
2.	227		30.26	538	38.90
3.	324		43.20	503	36.37
4.	78		10.40	134	9.68
5.	21		2.80	36	2.60
6.	16		2.13	22	1.59

Table E.XII: Numbers of Rural and Urban Pupils in
Selected Life Categories

	Rural N = 750		Urban N = 1383	
	Freq.	Percent	Freq.	Percent
Pre-school	127	16.93	654	47.28
City primary	229	30.53	1352	97.75
Non-state	186	24.80	401	28.99
Intermediate school	232	30.93	915	66.16
Mother employment	198	26.40	654	47.28
Father deceased	43	5.73	66	4.77
Father absent but alive	28	3.73	79	5.71
Maori Race	83	11.06	160	11.56
Eldest child	217	28.93	445	32.17
Only child	345	46.00	589	42.58
Religious Affil. Family	693	92.40	1215	87.85
Religious Practice family	308	41.06	564	40.78
Religious Practice pupil	485	64.66	776	56.10
Delinquency	8	1.06	46	3.32
Family size:				
1.	33	4.40	62	4.48
2.	96	12.80	211	15.25
3.	190	25.33	310	22.41
4.	170	22.66	354	25.59
5.	117	15.60	181	13.08
6.	57	7.60	117	8.45
7+.	87	11.60	148	10.70

Table E.XIII: Numbers of Maoris and Non-Maoris in
Socio-economic Classes and Parental
Education Levels

		Non-Maori N = 1890		Maori N = 293	
		Freq.	Percent	Freq.	Percent
Socio-economic status					
1.	181	9.57	21	8.64	
2.	815	43.12	60	24.69	
3.	195	10.31	14	5.76	
4.	339	17.93	43	17.69	
5.	278	14.70	64	26.33	
6.	82	4.33	41	16.87	
Fathers education					
1.	280	14.81	49	20.16	
2.	678	35.87	83	34.15	
3.	519	27.46	70	28.80	
4.	188	9.94	27	11.11	
5.	75	3.96	6	2.46	
6.	150	7.93	8	3.29	
Mothers education					
1.	190	10.05	44	18.10	
2.	685	36.24	80	32.92	
3.	732	38.73	95	39.09	
4.	193	10.21	19	7.81	
5.	53	2.80	4	1.64	
6.	37	1.95	1	0.41	

Table E.XIV: Numbers of Maoris and Non-Maoris in
Selected Life Categories

		Non-Maori N = 1890		Maori N = 243	
		Freq.	Percent	Freq.	Percent
Sex	Female	884	46.77	90	37.03
	Male	1006	53.22	153	62.96
Urban residence		1223	64.70	160	65.84
Rural residence		667	35.29	83	34.15
Pre-school		723	38.25	58	23.86
City primary		1404	74.28	177	72.83
Non-state		530	28.04	57	23.45
Intermediate school		991	52.43	156	64.19
Mother employment		741	39.20	111	45.67
Father deceased		85	4.49	24	9.87
Father absent but alive		86	4.55	21	8.64
Religious Affil. family		1699	89.89	209	86.00
Religious Practice family		1117	59.10	144	59.25
Religious Practice pupil		1130	59.78	131	53.90
Delinquency		33	1.74	21	8.64
Family size					
1 child		82	4.33	13	5.34
2 "		285	15.07	22	9.05
3 "		469	24.81	31	12.75
4 "		471	24.92	53	21.81
5 "		265	14.02	33	13.58
6 "		152	8.04	22	9.05
7+ "		166	8.78	69	28.39

Table E.XV: Numbers in Six Social Classes Falling in
Selected Life Categories
(Percentages in Parentheses)

Life Category	SOCIO-ECONOMIC CLASS						TOTAL
	1	2	3	4	5	6	(N = 2133)
Pre-school education	103 (51.0)	287 (32.8)	94 (45.0)	160 (41.9)	109 (31.9)	28 (22.8)	781 (36.6)
Non-state primary	84 (41.6)	276 (31.5)	62 (29.7)	74 (19.4)	76 (22.2)	15 (12.2)	587 (27.5)
Intermediate school	98 (48.5)	289 (33.0)	136 (65.1)	291 (76.2)	246 (71.9)	87 (70.7)	1147 (53.8)
Father deceased	7 (3.5)	23 (2.6)	17 (8.1)	21 (5.5)	26 (7.6)	15 (12.2)	109 (5.1)
Father absent	10 (4.9)	16 (1.8)	9 (4.3)	21 (5.5)	36 (10.5)	15 (12.3)	107 (5.0)
Maori race	21 (10.4)	60 (6.8)	14 (6.7)	43 (11.2)	64 (18.7)	41 (33.3)	243 (11.3)
Religious Affil., family	183 (90.6)	807 (92.2)	190 (91.0)	338 (88.5)	294 (86.0)	96 (78.0)	1908 (89.4)
Religious Practice, family	116 (57.4)	374 (42.7)	96 (45.9)	134 (35.1)	123 (36.0)	29 (23.6)	872 (40.9)
Religious Practice, pupil	145 (71.8)	597 (68.2)	120 (57.4)	186 (48.7)	171 (50.0)	42 (34.1)	1261 (59.1)
Delinquency	5 (2.5)	7 (0.8)	2 (0.9)	13 (3.4)	17 (5.0)	10 (8.1)	54 (2.5)

Table E.XVI: . Numbers of Delinquent and Non-Delinquent Pupils
in Selected Life Categories

		Delinquents		Non-delinquents	
		Freq.	Percent	Freq.	Percent
Sex	Males	36	66.66	1123	54.01
	Females	18	33.33	956	45.98
Urban residence		46	85.18	1337	64.30
Pre-school education		17	31.48	764	36.74
City primary		45	83.33	1536	73.88
Non-state school		9	16.66	578	27.80
Intermediate school		46	85.18	1101	52.95
Mother employment		20	37.03	832	40.01
Father deceased		6	11.11	103	4.95
Father absent		8	14.81	99	4.76
Maori race		21	38.88	222	10.67
Religious Affil. family		44	81.48	1864	89.65
Religious Practice family		18	33.33	854	41.07
Religious Practice pupil		25	46.29	1236	59.45
Socio-economic status					
	1. 5		9.25	197	9.47
	2. 7		12.96	868	41.75
	3. 2		3.70	207	9.95
	4. 13		24.07	369	17.74
	5. 17		34.48	325	15.63
	6. 10		18.51	113	5.43
Fathers education					
	1. 12		22.22	317	15.24
	2. 19		35.18	742	35.69
	3. 13		24.07	576	27.70
	4. 7		12.96	208	10.00
	5. 0		0.00	81	3.89
	6. 3		5.55	155	7.45
Mothers education					
	1. 10		18.51	224	10.77
	2. 21		38.88	744	35.78
	3. 19		35.18	808	38.86
	4. 3		5.55	209	10.05
	5. 0		0.00	57	2.74
	6. 1		1.85	37	1.77
Family size					
	1. 4		7.40	91	4.37
	2. 5		9.25	302	14.52
	3. 9		16.66	491	23.61
	4. 8		14.81	516	24.81
	5. 4		7.40	294	14.14
	6. 7		12.96	167	8.03
	7+ 17		31.48	218	10.48

Table E.XVII: Number of Pupils in Total Sample, in Schools, in Social Classes, and in Selected Categories perceiving Parental Attitudes to Academic Attainment

Group	Parental Attitude					
	If ever I came bottom of the class my parents would:					
	1		2		3	
	not mind at all		be a bit sad and tell me to try harder		be very angry and expect better results next time	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Total	81	(3.85)	1554	(73.92)	462	(21.97)
Makora	29	(6.00)	333	(68.94)	116	(24.01)
Wairarapa	22	(3.03)	564	(77.79)	139	(19.17)
Rathkeale	9	(3.11)	222	(76.81)	58	(20.06)
St. Josephs	2	(0.96)	119	(57.21)	87	(41.82)
St. Matthews	6	(4.28)	113	(80.71)	21	(15.00)
St. Brides	7	(4.43)	125	(79.11)	26	(16.45)
Solway	6	(6.12)	78	(79.59)	14	(14.28)
Males	33	(2.88)	812	(71.10)	293	(25.65)
Females	48	(5.00)	742	(77.29)	169	(17.60)
Delinquents	4	(7.54)	38	(71.69)	10	(18.86)
Juniors	49	(4.31)	832	(73.20)	252	(22.20)
Seniors	32	(3.30)	722	(74.66)	210	(21.71)
Maori	16	(6.69)	172	(72.38)	48	(20.08)
Urban	47	(3.45)	980	(72.11)	328	(24.13)
Rural	34	(4.58)	574	(77.35)	133	(17.92)
SES 1	6	(3.00)	138	(69.00)	56	(28.00)
2	31	(3.59)	647	(75.05)	183	(21.22)
3	5	(2.41)	166	(80.19)	36	(17.39)
4	16	(4.24)	264	(70.02)	95	(25.19)
5	14	(4.21)	249	(75.00)	68	(20.48)
6	9	(7.31)	90	(73.17)	23	(18.69)

Table E.XVIII: Numbers of Pupils in Total Sample, in Schools, in Social Classes and in Selected Categories perceiving Parental Attitudes to Pupil Job Level

Group	Parental Attitude					
	1		2		3	
	Don't mind which job		Similar job to father's		Better job than father's	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Total	1389	(66.07)	213	(10.13)	497	(26.64)
Makora	332	(68.73)	23	(4.76)	125	(25.87)
Wairarapa	477	(65.79)	61	(8.41)	187	(25.79)
Rathkeale	147	(50.86)	65	(22.49)	77	(26.64)
St. Josephs	105	(50.48)	36	(17.30)	67	(32.21)
St. Matthews	105	(75.00)	20	(14.28)	15	(10.71)
St. Brides	137	(86.70)	6	(3.79)	15	(9.49)
Solway	86	(87.75)	2	(2.04)	10	(10.20)
Males	602	(52.71)	164	(14.36)	375	(32.83)
Females	787	(81.97)	49	(5.10)	122	(12.70)
Delinquents	36	(67.92)	6	(11.32)	11	(20.75)
Juniors	751	(66.16)	113	(9.95)	270	(23.78)
Seniors	638	(65.97)	100	(10.34)	227	(23.47)
SES 1	134	(67.00)	49	(24.50)	17	(8.50)
SES 2	566	(65.66)	105	(12.18)	191	(22.15)
SES 3	150	(72.46)	18	(8.69)	38	(18.35)
SES 4	248	(65.78)	26	(6.89)	103	(27.32)
SES 5	217	(65.36)	12	(3.61)	101	(30.42)
SES 6	74	(60.16)	3	(2.43)	46	(37.39)
Maori	147	(61.50)	26	(10.87)	66	(27.61)
Urban	902	(66.37)	139	(10.22)	317	(23.32)
Rural	487	(65.63)	74	(9.97)	179	(24.12)

Table E.XIX: Numbers of Pupils in Total Sample, Schools, Social Classes and Selected Categories perceiving Parental Attitudes to Pupil Smoking

Group	Parental Attitude					
	1		2		3	
	Allow me to smoke if I want to		Don't mind if I smoke		Will not allow me to smoke	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Total	520	(24.73)	384	(18.26)	1194	(56.80)
Makora	120	(24.84)	80	(16.56)	279	(57.76)
Wairarapa	183	(25.24)	124	(17.10)	418	(57.65)
Rathkeale	84	(29.06)	69	(23.87)	136	(47.05)
St. Josephs	57	(27.40)	51	(24.51)	100	(48.07)
St. Matthews	34	(24.28)	14	(10.00)	92	(65.71)
St. Brides	24	(15.18)	36	(22.78)	98	(62.02)
Solway	18	(18.36)	10	(10.20)	70	(71.42)
Males	308	(26.97)	241	(21.10)	589	(51.57)
Females	212	(22.08)	143	(14.89)	605	(63.02)
Delinquents	13	(24.52)	15	(28.30)	25	(47.16)
Juniors	162	(14.27)	166	(14.62)	805	(70.92)
Seniors	358	(37.02)	218	(22.54)	389	(40.22)
Maori	54	(22.59)	61	(25.52)	123	(51.46)
Urban	346	(25.45)	247	(18.17)	763	(56.14)
Rural	174	(23.45)	137	(18.46)	430	(57.95)
SES 1	48	(24.00)	38	(19.00)	114	(57.00)
2	219	(25.40)	144	(16.70)	497	(57.65)
3	59	(28.50)	38	(18.35)	110	(53.14)
4	86	(22.81)	76	(20.15)	214	(56.76)
5	70	(21.08)	66	(19.87)	195	(58.73)
6	38	(30.89)	22	(17.88)	63	(51.21)

Table E.XX: Numbers of Pupils in Total Sample, Schools, Social Classes and Selected Social Categories perceiving Parental Expectation that Pupils do Household Chores

Group	Parental Expectation					
	1		2		3	
	I do jobs very rarely		I do jobs occasionally - not every week		I do jobs regularly - several times a week	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Total	71	(3.37)	578	(24.49)	1451	(69.02)
Makora	20	(4.14)	113	(23.39)	348	(72.04)
Wairarapa	24	(3.31)	196	(27.03)	505	(69.65)
Rathkeale	16	(5.53)	118	(40.83)	155	(53.63)
St. Josephs	2	(0.96)	64	(30.76)	142	(68.26)
St. Matthews	4	(2.85)	39	(27.85)	97	(69.28)
St. Brides	2	(1.26)	26	(16.45)	130	(82.27)
Solway	3	(3.06)	22	(22.44)	73	(74.48)
Males	42	(3.67)	398	(34.85)	701	(61.38)
Females	29	(3.02)	180	(18.75)	750	(78.12)
Delinquent	2	(3.77)	17	(32.07)	34	(64.15)
Juniors	48	(4.22)	291	(25.63)	794	(69.95)
Seniors	23	(2.37)	187	(29.67)	657	(69.74)
Maori	17	(7.11)	64	(26.77)	158	(66.10)
Urban	51	(3.75)	392	(28.84)	914	(67.25)
Rural	20	(2.69)	186	(25.06)	536	(72.23)
SES 1	7	(3.50)	58	(29.00)	135	(67.50)
2	25	(2.90)	253	(29.35)	583	(67.63)
3	5	(2.41)	55	(26.57)	147	(71.01)
4	17	(4.50)	91	(24.13)	268	(71.08)
5	10	(3.01)	86	(25.90)	236	(71.08)
6	7	(5.69)	35	(24.85)	81	(65.85)

Table E.XXI: Numbers of Pupils in Total Sample, Schools, Social Classes and Selected Social Categories who Go Out with their Parents

Group	Frequency of Going Out with Parents					
	1		2		3	
	Only rarely or never		Occasionally		At least once a month	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Total	277	(13.17)	984	(46.81)	837	(39.81)
Makora	99	(20.49)	233	(48.24)	149	(30.84)
Wairarapa	118	(16.27)	350	(48.27)	257	(35.44)
Rathkeale	19	(6.57)	136	(47.05)	133	(46.02)
St. Josephs	17	(8.17)	80	(38.46)	111	(53.36)
St. Matthews	6	(4.28)	75	(53.57)	59	(42.14)
St. Brides	11	(6.96)	69	(43.67)	78	(49.36)
Solway	6	(6.12)	41	(41.83)	50	(51.02)
Males	154	(13.48)	514	(45.00)	471	(41.24)
Females	123	(12.81)	470	(48.95)	366	(38.12)
Delinquent	12	(22.64)	26	(49.05)	14	(26.41)
Juniors	148	(13.03)	539	(47.48)	444	(39.11)
Seniors	129	(13.34)	445	(46.01)	393	(40.64)
Maori	41	(17.15)	126	(52.71)	71	(29.70)
Urban	210	(15.45)	654	(48.12)	491	(36.12)
Rural	66	(8.89)	330	(44.47)	346	(46.63)
SES 1	15	(7.50)	92	(46.00)	93	(46.50)
2	76	(8.81)	396	(45.93)	387	(44.89)
3	32	(15.45)	89	(42.99)	86	(41.54)
4	55	(14.58)	183	(48.54)	139	(36.87)
5	66	(19.87)	157	(47.28)	108	(32.53)
6	32	(26.01)	67	(54.47)	24	(19.51)

Table E.XXII: Numbers of Pupils in Total Sample, Schools, Social Classes and Selected Social Categories perceiving Higher and Lower Family Warmth

Group

	1		2		3	
	Lower Warmth		Average Warmth		Higher Warmth	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Total	80	(4.27)	861	(40.96)	1151	(54.75)
Makora	28	(5.78)	240	(49.68)	215	(44.50)
Wairarapa	45	(6.19)	310	(42.75)	370	(51.03)
Rathkeale	2	(0.68)	93	(32.17)	194	(67.11)
St. Josephs	8	(3.84)	70	(33.65)	130	(62.50)
St. Matthews	1	(0.71)	52	(37.14)	87	(62.13)
St. Brides	3	(1.89)	64	(40.50)	91	(57.58)
Solway	3	(3.06)	31	(31.63)	64	(65.30)
Males	36	(3.14)	464	(40.63)	642	(56.21)
Females	54	(5.61)	397	(41.35)	509	(53.02)
Delinquent	7	(13.20)	25	(47.16)	21	(39.62)
Juniors	56	(4.93)	432	(38.06)	647	(57.00)
Seniors	6	(3.51)	429	(44.36)	504	(52.11)
Maori	15	(6.27)	102	(42.67)	122	(51.04)
Urban	66	(4.85)	583	(42.89)	710	(52.24)
Rural	24	(3.23)	277	(37.33)	441	(59.43)
SES 1	2	(1.00)	67	(33.50)	231	(65.50)
2	10	(1.15)	330	(38.28)	522	(60.55)
3	4	(1.92)	82	(39.61)	121	(58.44)
4	30	(7.95)	168	(44.56)	179	(47.47)
5	30	(9.02)	153	(46.08)	149	(44.87)
6	14	(11.37)	60	(40.78)	49	(39.83)

Table E.XXIII: Numbers of Pupils in Total Sample, Schools, Social Classes and Selected Categories perceiving Positive Family Climate

Group	Quartile Scores			
	Lowest	Second	Third	Highest
	Freq.Percent	Freq.Percent	Freq.Percent	Freq.Percent
Total	588 (27.97)	374 (17.79)	570 (27.11)	570 (27.11)
Makora	167 (34.57)	89 (18.42)	120 (24.84)	107 (22.15)
Wairarapa	257 (35.44)	135 (18.62)	187 (25.79)	146 (20.13)
Rathkeale	39 (13.49)	41 (14.18)	103 (35.64)	106 (36.67)
St. Josephs	47 (22.59)	46 (22.11)	42 (20.19)	73 (35.09)
St. Matthews	21 (15.00)	35 (25.00)	41 (29.28)	43 (30.71)
St. Brides	39 (24.68)	18 (11.39)	48 (30.37)	53 (33.54)
Solway	17 (17.34)	10 (10.20)	29 (29.59)	42 (42.85)
Males	309 (27.05)	218 (19.08)	327 (28.63)	288 (25.21)
Females	279 (29.06)	156 (16.25)	243 (25.31)	282 (29.32)
Delinquent	26 (49.05)	11 (20.75)	7 (13.20)	9 (16.98)
Juniors	298 (26.25)	191 (16.82)	308 (27.13)	338 (29.77)
Seniors	290 (29.98)	183 (18.92)	262 (27.09)	232 (23.99)
Maori	61 (25.52)	38 (15.89)	69 (28.87)	71 (29.70)
Urban	411 (30.24)	249 (18.32)	366 (29.93)	333 (24.50)
Rural	176 (23.71)	125 (16.84)	204 (27.49)	237 (31.94)
SES 1	42 (21.00)	35 (17.50)	63 (31.50)	60 (30.00)
2	184 (21.34)	156 (18.09)	244 (28.30)	278 (32.25)
3	65 (31.40)	26 (12.56)	64 (30.91)	52 (25.12)
4	121 (32.09)	69 (18.30)	99 (26.25)	88 (23.34)
5	122 (36.74)	67 (20.18)	70 (21.08)	73 (21.78)
6	53 (43.08)	21 (17.07)	30 (24.39)	19 (15.44)

Table E.XXIV: Numbers of Pupils in Seven Secondary Schools
Recording Negative, Neutral and Positive
Attitudes to Teachers
(Percentages in Parentheses)

Group	Negative		Neutral		Positive	
Total	174	(8.27)	540	(25.68)	1387	(65.98)
Makora	28	(5.79)	137	(28.36)	317	(65.63)
Wairarapa	74	(10.20)	227	(31.31)	424	(58.48)
Rathkeale	27	(9.34)	60	(20.76)	202	(69.89)
St. Josephs	12	(5.76)	30	(14.42)	166	(79.80)
St. Matthews	13	(9.28)	31	(22.14)	96	(68.57)
St. Brides	8	(5.06)	24	(15.18)	126	(79.74)
Solway	12	(12.24)	31	(31.63)	55	(56.12)

Table E.XXV: Numbers of Pupils in Selected Social Categories
Recording Negative, Neutral and Positive Attitudes
to Teachers
(Percentages in Parentheses)

Group	Negative		Neutral		Positive	
Males	91	(7.96)	294	(25.74)	756	(66.19)
Females	83	(8.64)	246	(25.62)	631	(65.72)
Delinquents	14	(26.41)	25	(47.16)	14	(26.41)
Non-delinquents	160	(7.81)	515	(25.14)	1372	(66.99)
Juniors	73	(6.43)	318	(28.01)	743	(65.46)
Seniors	101	(10.44)	222	(22.95)	644	(66.59)
SES 1	21	(10.50)	40	(20.00)	139	(69.50)
2	69	(8.00)	214	(24.82)	579	(67.16)
3	16	(7.72)	59	(28.50)	132	(63.76)
4	28	(7.42)	100	(26.52)	249	(66.04)
5	25	(7.53)	83	(25.00)	223	(67.16)
6	15	(12.19)	44	(35.77)	64	(52.03)
Maori	25	(10.46)	72	(30.12)	142	(59.41)
Urban	123	(9.05)	341	(25.09)	894	(65.78)
Rural	51	(6.87)	199	(26.81)	492	(66.30)

Table E.XXVI: Numbers of Pupils in Selected Categories with Low, Average and High Primary School Reading Levels

Group	Primary School Reading Grades collapsed into three Levels					
	Low (4 - 5)		Average (3)		High (1 - 2)	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Total	315	(14.97)	1052	(50.04)	735	(34.96)
Makora	86	(17.79)	248	(51.34)	149	(30.84)
Wairarapa	118	(16.27)	342	(47.17)	265	(36.54)
Rathkeale	43	(14.87)	136	(47.05)	110	(38.05)
St. Josephs	33	(15.86)	110	(52.88)	65	(31.24)
St. Matthews	18	(12.85)	87	(62.14)	35	(25.00)
St. Brides	11	(6.95)	90	(56.96)	57	(36.06)
Solway	6	(6.12)	38	(38.77)	54	(55.09)
Males	215	(18.82)	569	(49.82)	358	(31.34)
Females	100	(10.41)	483	(50.31)	377	(39.26)
Delinquent	16	(30.18)	28	(52.83)	9	(16.97)
Juniors	218	(19.20)	567	(49.95)	350	(30.83)
Seniors	97	(10.02)	485	(50.15)	385	(39.80)
Maori	67	(28.02)	128	(53.55)	44	(18.40)
Urban	194	(14.26)	684	(50.33)	481	(35.38)
Rural	121	(16.30)	367	(49.46)	254	(34.22)
SES 1	18	(9.00)	83	(41.50)	99	(49.50)
2	104	(12.05)	444	(51.50)	314	(36.42)
3	18	(8.68)	114	(55.07)	75	(36.22)
4	65	(17.21)	189	(50.13)	123	(32.62)
5	72	(21.68)	168	(50.60)	92	(27.70)
6	38	(30.89)	53	(43.08)	32	(26.01)

Table E.XXVII: Numbers of Pupils in Selected Categories with Low, Average and High Primary School Arithmetic Levels

Group	Primary School Arithmetic Grades collapsed into three levels					
	Low (4 - 5)		Average (3)		High (1 - 2)	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Total	383	(18.21)	1119	(53.23)	597	(28.39)
Makora	91	(18.83)	265	(54.86)	127	(26.29)
Wairarapa	128	(17.65)	384	(52.96)	210	(28.96)
Rathkeale	54	(18.67)	128	(44.29)	107	(37.01)
St. Josephs	35	(16.82)	126	(60.57)	47	(22.59)
St. Matthews	21	(14.99)	93	(66.42)	26	(18.56)
St. Brides	40	(25.31)	78	(49.36)	40	(25.31)
Solway	14	(14.28)	44	(44.89)	40	(40.81)
Males	232	(20.30)	591	(51.75)	318	(26.84)
Females	141	(15.72)	528	(55.00)	279	(29.05)
Delinquent	24	(45.27)	21	(39.62)	7	(13.20)
Juniors	236	(20.79)	603	(53.12)	294	(25.89)
Seniors	147	(15.19)	516	(53.36)	283	(31.32)
Maori	86	(35.97)	122	(51.04)	30	(12.54)
Urban	244	(17.95)	725	(53.34)	388	(28.55)
Rural	139	(18.73)	393	(52.96)	209	(28.16)
SES 1	25	(12.50)	102	(51.00)	73	(36.50)
2	144	(16.70)	449	(52.08)	268	(31.09)
3	29	(14.00)	118	(57.00)	60	(28.98)
4	71	(18.82)	206	(54.64)	99	(23.25)
5	81	(24.30)	181	(54.51)	69	(20.77)
6	33	(26.82)	62	(50.40)	28	(22.75)

Table E.XXVIII: Numbers of Pupils in Selected Categories
with Secondary School Perseverance Ratings
collapsed into three Levels

Group	Perseverance Ratings collapsed into three levels					
	Low (4 - 5)		Average (3)		High (1 - 2)	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Total	329	(15.64)	823	(39.15)	950	(45.18)
Makora	27	(5.58)	138	(28.57)	318	(65.83)
Wairarapa	189	(26.06)	344	(47.44)	192	(26.47)
Rathkeale	53	(18.33)	97	(33.56)	139	(48.08)
St. Josephs	29	(13.94)	121	(58.17)	58	(27.87)
St. Matthews	0	(0.00)	26	(18.57)	114	(81.42)
St. Brides	27	(17.08)	65	(41.13)	66	(41.76)
Solway	4	(4.08)	31	(31.63)	63	(64.27)
Males	200	(17.51)	501	(43.87)	441	(38.60)
Females	129	(13.43)	322	(33.54)	509	(53.01)
Delinquents	25	(47.16)	14	(26.41)	14	(26.41)
Juniors	176	(15.50)	436	(38.41)	523	(46.07)
Seniors	153	(15.81)	387	(40.02)	427	(44.14)
Maori	50	(20.91)	97	(40.58)	92	(38.48)
Urban	236	(17.36)	537	(39.51)	586	(43.11)
Rural	93	(12.53)	285	(38.40)	364	(49.05)
SES 1	25	(12.50)	70	(35.00)	105	(52.50)
2	104	(12.06)	334	(38.74)	424	(49.17)
3	43	(20.76)	73	(35.26)	91	(43.95)
4	69	(18.29)	141	(37.40)	167	(44.29)
5	62	(18.66)	151	(45.48)	119	(35.84)
6	26	(21.13)	53	(43.08)	44	(35.77)

Table E.XXIX: Numbers of Pupils in Selected Categories
Enjoying English Classes

Group	Self-rated Enjoyment of Class					
	Low (Hate or dislike it)		Average		High (Like it pretty much or very much)	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Total	169	(8.03)	818	(38.91)	1115	(53.04)
Makora	66	(13.65)	202	(41.82)	215	(44.51)
Wairarapa	59	(8.13)	284	(39.17)	382	(52.68)
Rathkeale	12	(4.14)	98	(33.91)	179	(61.93)
St. Josephs	15	(7.21)	81	(38.94)	112	(53.84)
St. Matthews	7	(4.99)	55	(39.28)	78	(55.71)
St. Brides	8	(5.06)	63	(39.87)	87	(55.05)
Solway	2	(2.04)	35	(35.71)	61	(62.24)
Males	108	(9.44)	477	(41.76)	557	(48.77)
Females	61	(6.35)	341	(35.52)	558	(58.12)
Delinquent	10	(18.86)	20	(37.73)	23	(43.38)
Juniors	86	(7.57)	446	(39.29)	603	(53.11)
Seniors	83	(8.58)	372	(38.46)	512	(52.94)
Maori	29	(12.12)	92	(38.49)	118	(49.36)
Urban	94	(6.90)	515	(37.89)	750	(55.17)
Rural	75	(10.10)	303	(40.83)	364	(49.05)
SES 1	8	(4.00)	61	(30.50)	131	(65.50)
2	62	(7.19)	352	(40.83)	448	(51.96)
3	17	(8.20)	84	(40.57)	106	(51.20)
4	28	(7.32)	152	(40.31)	197	(52.25)
5	33	(9.93)	122	(36.74)	177	(53.30)
6	21	(17.07)	47	(38.21)	55	(44.70)

Table E.XXX: Numbers of Pupils in Selected Categories
Enjoying Mathematics Classes

Group	Self-rated Enjoyment of Class					
	Low (Hate or dislike it)		Average		High (Like it pretty much or very much)	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Total	624	(29.68)	762	(36.25)	716	(34.05)
Makora	124	(25.66)	196	(40.57)	163	(33.74)
Wairarapa	199	(27.44)	275	(37.93)	251	(34.61)
Rathkeale	75	(25.94)	95	(32.87)	119	(41.16)
St. Josephs	35	(16.82)	82	(39.42)	91	(43.74)
St. Matthews	57	(40.71)	38	(27.14)	45	(32.13)
St. Brides	72	(45.56)	51	(32.27)	35	(22.14)
Solway	62	(63.25)	24	(24.48)	12	(12.24)
Males	258	(22.58)	434	(38.00)	450	(39.40)
Females	366	(38.12)	328	(34.16)	266	(27.70)
Delinquent	16	(30.18)	18	(33.96)	19	(35.84)
Juniors	272	(23.96)	423	(37.26)	440	(38.76)
Seniors	352	(36.40)	339	(35.05)	276	(28.53)
Maori	56	(23.42)	78	(32.63)	105	(43.93)
Urban	385	(28.32)	505	(37.15)	469	(34.50)
Rural	239	(32.20)	256	(34.50)	247	(33.28)
SES 1	58	(29.00)	56	(28.00)	86	(43.00)
2	278	(32.24)	301	(34.91)	283	(32.82)
3	53	(25.69)	86	(41.54)	68	(32.84)
4	103	(27.31)	147	(38.99)	127	(33.67)
5	99	(29.81)	121	(36.44)	112	(33.73)
6	33	(26.82)	50	(40.65)	40	(32.51)

Table E.XXXI: Numbers of Pupils in Selected Categories
Enjoying Social Studies Classes

Group	Self-rated Enjoyment of Class					
	Low (Hate or dislike it)		Average		High (Like it pretty much or very much)	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Total	168	(7.99)	674	(32.06)	1260	(59.93)
Makora	27	(5.58)	124	(25.67)	332	(68.72)
Wairarapa	70	(9.64)	252	(34.75)	403	(55.58)
Rathkeale	23	(7.95)	92	(31.83)	174	(60.20)
St. Josephs	13	(6.24)	64	(30.76)	131	(62.98)
St. Matthews	11	(7.84)	57	(40.71)	72	(51.42)
St. Brides	20	(12.65)	50	(31.64)	88	(55.68)
Solway	4	(4.08)	35	(35.71)	59	(60.20)
Males	84	(7.35)	363	(31.78)	695	(60.85)
Females	84	(8.74)	311	(32.39)	565	(58.84)
Delinquents	10	(18.86)	19	(35.84)	24	(45.27)
Juniors	78	(6.86)	321	(28.28)	736	(64.83)
Seniors	90	(9.29)	353	(36.50)	524	(54.18)
Maori	24	(10.03)	63	(26.35)	152	(63.59)
Urban	106	(7.79)	421	(30.97)	832	(61.21)
Rural	62	(8.35)	253	(34.09)	527	(57.53)
SES 1	12	(6.00)	49	(24.50)	139	(69.50)
2	75	(8.69)	296	(34.33)	491	(56.95)
3	10	(4.82)	66	(31.88)	131	(63.27)
4	25	(6.62)	125	(33.15)	227	(60.20)
5	32	(9.63)	103	(31.02)	197	(59.33)
6	14	(11.38)	35	(28.45)	74	(60.15)

Table E.XXXII: Numbers of Pupils in Selected Categories
Enjoying Science Classes

Group	Self-rated Enjoyment of Class					
	Low (Hate or dislike it)		Average		High (Like it pretty much or very much)	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Total	377	(17.93)	739	(35.15)	986	(46.90)
Makora	77	(13.86)	258	(32.71)	258	(53.41)
Wairarapa	127	(17.51)	260	(35.86)	338	(46.61)
Rathkeale	64	(22.14)	89	(30.79)	136	(47.05)
St. Josephs	28	(13.45)	74	(35.57)	106	(50.96)
St. Matthews	34	(24.28)	51	(36.42)	55	(39.28)
St. Brides	38	(24.04)	68	(43.03)	52	(32.91)
Solway	19	(19.38)	39	(39.79)	40	(40.81)
Males	178	(15.58)	358	(31.34)	606	(53.06)
Females	199	(20.72)	381	(39.68)	380	(39.58)
Delinquent	15	(28.29)	20	(37.73)	18	(33.95)
Juniors	164	(14.44)	381	(33.56)	590	(51.97)
Seniors	213	(22.02)	358	(37.02)	396	(40.94)
Maori	50	(20.91)	74	(30.96)	115	(48.10)
Urban	262	(19.27)	484	(35.61)	613	(45.09)
Rural	125	(15.48)	255	(34.36)	372	(50.12)
SES 1	27	(13.50)	55	(27.50)	118	(59.00)
2	157	(18.20)	308	(35.73)	397	(46.04)
3	30	(14.48)	83	(40.09)	94	(45.40)
4	67	(17.76)	130	(34.48)	180	(47.74)
5	72	(21.67)	123	(37.04)	137	(41.26)
6	24	(19.51)	40	(32.52)	59	(47.95)

Table E.XXXIII: Numbers of Pupils making Negative, Neutral, and Positive Responses to the Sentence completion "Teachers in this school think of me as -"

Group	Sentence Completion Type					
	Negative		Neutral		Positive	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Total	365	(17.36)	1107	(52.66)	629	(29.92)
Makora	74	(15.32)	231	(47.82)	177	(36.64)
Wairarapa	128	(17.65)	405	(55.86)	192	(26.48)
Rathkeale	41	(14.18)	169	(58.47)	79	(27.33)
St. Josephs	29	(13.94)	115	(55.28)	64	(30.76)
St. Matthews	34	(24.28)	64	(45.71)	42	(30.00)
St. Brides	29	(18.35)	76	(48.10)	53	(33.54)
Solway	29	(29.59)	47	(47.95)	22	(22.44)
Males	169	(14.79)	646	(56.56)	326	(28.54)
Females	196	(20.41)	461	(48.02)	303	(31.56)
Delinquent	16	(30.18)	28	(52.83)	9	(16.98)
Juniors	175	(15.41)	642	(56.56)	317	(27.92)
Seniors	190	(19.64)	465	(48.08)	312	(32.26)
Maori	46	(19.24)	133	(55.64)	60	(25.10)
Urban	264	(19.42)	683	(50.25)	411	(30.24)
Rural	100	(13.47)	424	(57.14)	218	(29.38)
SES 1	42	(21.00)	93	(46.50)	65	(32.50)
2	135	(15.66)	476	(55.22)	250	(29.00)
3	35	(16.90)	101	(48.79)	71	(34.29)
4	73	(19.36)	191	(50.66)	113	(29.97)
5	52	(15.66)	186	(56.02)	94	(28.31)
6	27	(21.95)	60	(48.78)	36	(29.26)

Table E.XXXIV: Numbers of Pupils perceiving Opportunity

Group	Quartile Frequencies on Perception of Opportunity Scale			
	Lowest Freq.Percent	Second Freq.Percent	Third Freq.Percent	Highest Freq.Percent
Total	496 (23.59)	588 (27.97)	544 (25.88)	474 (22.54)
Makora	89 (18.42)	116 (24.01)	124 (25.67)	154 (31.88)
Wairarapa	186 (25.65)	229 (31.58)	192 (26.48)	118 (16.27)
Rathkeale	82 (28.37)	77 (26.64)	82 (28.37)	48 (16.60)
St. Josephs	54 (25.96)	63 (30.28)	50 (24.03)	41 (19.71)
St. Matthews	29 (20.71)	39 (27.85)	31 (22.14)	41 (29.28)
St. Brides	30 (18.98)	40 (25.31)	41 (25.94)	47 (29.74)
Solway	26 (26.53)	24 (24.48)	24 (24.48)	24 (24.48)
Males	312 (27.32)	331 (28.98)	296 (25.91)	203 (17.77)
Females	184 (19.16)	257 (26.77)	248 (25.83)	271 (28.22)
Delinquents	14 (26.41)	17 (32.07)	15 (28.30)	7 (13.20)
Juniors	251 (22.11)	304 (26.78)	301 (26.51)	279 (24.58)
Seniors	245 (25.33)	284 (29.36)	243 (25.12)	195 (20.16)
Maori	67 (28.03)	69 (28.87)	57 (23.84)	46 (19.24)
Urban	280 (20.60)	361 (26.56)	388 (28.55)	330 (24.28)
Rural	216 (29.11)	227 (30.59)	156 (21.02)	143 (19.22)
SES 1	44 (22.00)	50 (25.00)	56 (28.00)	50 (25.00)
2	214 (24.82)	265 (30.74)	210 (24.36)	173 (20.06)
3	43 (20.77)	61 (29.46)	55 (26.57)	48 (23.18)
4	77 (20.42)	105 (27.85)	104 (27.58)	91 (24.13)
5	76 (22.89)	77 (23.19)	96 (28.91)	83 (25.00)
6	42 (34.14)	30 (24.39)	23 (18.69)	28 (22.76)

Table E.XXXV: Numbers of Pupils Assenting to Conservative Christian Beliefs

Group	Quartile Frequencies on Belief Scale			
	Lowest	Second	Third	Highest
	Freq.Percent	Freq.Percent	Freq.Percent	Freq.Percent
Total	561 (26.68)	509 (24.21)	533 (25.25)	499 (23.73)
Makora	177 (36.64)	124 (25.67)	109 (22.56)	73 (15.11)
Wairarapa	209 (28.82)	201 (27.72)	187 (25.79)	128 (17.65)
Rathkeale	92 (31.83)	73 (25.25)	72 (24.91)	52 (17.99)
St. Josephs	2 (0.96)	16 (7.69)	50 (24.03)	140 (67.30)
St. Matthews	29 (20.71)	39 (27.85)	31 (22.14)	41 (29.28)
St. Brides	3 (1.89)	16 (10.12)	54 (34.17)	85 (53.79)
Solway	19 (19.38)	34 (34.69)	33 (33.67)	12 (12.24)
Males	339 (29.68)	269 (23.55)	251 (21.97)	283 (24.78)
Females	222 (23.12)	240 (25.00)	282 (29.37)	216 (22.50)
Delinquents	20 (37.73)	8 (15.09)	12 (22.64)	13 (24.52)
Juniors	267 (23.52)	272 (23.96)	306 (26.96)	290 (25.55)
Seniors	294 (30.40)	237 (24.50)	227 (23.47)	209 (21.61)
Maori	58 (24.26)	59 (24.68)	61 (25.52)	61 (25.52)
Urban	377 (27.74)	292 (21.48)	345 (25.38)	345 (25.38)
Rural	184 (24.79)	216 (29.11)	188 (25.33)	154 (20.75)
SES 1	50 (25.00)	45 (22.50)	52 (26.00)	53 (26.50)
2	222 (25.75)	227 (26.33)	214 (24.82)	199 (23.08)
3	52 (25.12)	57 (27.53)	46 (22.22)	52 (25.12)
4	104 (27.58)	79 (20.95)	97 (25.72)	97 (25.72)
5	84 (25.30)	73 (21.98)	100 (30.12)	75 (22.59)
6	49 (39.83)	27 (21.95)	24 (19.51)	23 (18.69)

Table E.XXXVI: Numbers of Pupils Scoring at Four Levels of Happiness

Group	Quartiles on Happiness Scale Scores			
	Lowest	Second	Third	Highest
	Freq.Percent	Freq.Percent	Freq.Percent	Freq.Percent
Total	490 (23.31)	682 (32.44)	351 (16.69)	579 (27.54)
Makora	116 (24.01)	156 (32.29)	82 (16.97)	129 (26.70)
Wairarapa	185 (25.51)	241 (33.24)	111 (15.31)	188 (25.93)
Rathkeale	56 (19.37)	97 (33.56)	46 (15.91)	90 (31.14)
St. Josephs	43 (20.67)	73 (35.09)	32 (15.38)	60 (28.84)
St. Matthews	28 (20.00)	41 (29.28)	30 (21.42)	41 (29.28)
St. Brides	34 (21.51)	45 (28.48)	37 (23.41)	42 (26.58)
Solway	28 (28.57)	28 (28.57)	13 (13.26)	29 (29.59)
Males	249 (21.80)	383 (33.53)	194 (16.78)	316 (27.67)
Females	241 (25.10)	299 (31.14)	157 (16.35)	263 (27.39)
Delinquents	20 (37.73)	19 (35.84)	7 (13.20)	7 (13.20)
Juniors	251 (22.11)	358 (31.54)	186 (16.38)	340 (29.95)
Seniors	239 (24.71)	324 (33.50)	165 (17.06)	239 (24.71)
Maori	64 (26.77)	63 (26.35)	44 (18.41)	68 (24.45)
Urban	332 (24.42)	445 (32.74)	228 (16.77)	354 (26.04)
Rural	158 (21.29)	236 (31.80)	123 (16.57)	225 (30.32)
SES 1	47 (23.50)	60 (30.00)	42 (21.00)	51 (25.50)
2	173 (20.06)	290 (33.64)	145 (16.82)	254 (29.46)
3	53 (25.60)	67 (32.36)	34 (16.42)	53 (25.60)
4	83 (22.01)	129 (34.21)	63 (16.71)	102 (27.05)
5	94 (28.31)	97 (29.21)	48 (14.45)	93 (28.01)
6	40 (32.52)	38 (30.89)	19 (15.44)	26 (21.13)

APPENDIX F

FACTORS OF PUPIL CHARACTERISTICS

Table F. XLI: Oblique Primary Factors of Intellectual Variables: Males

Variable	Loading on Factor			h^2
	I	II	III	
PVR	-.63	-.09	.01	.360
EA	-.77	.08	-.02	.664
SSA	-.80	.02	.00	.664
SA	-.83	.01	-.05	.703
MA	-.80	-.01	.03	.641
AA	-.97	.02	-.01	.971
PO	.11	.08	-.67	.473
RLB	-.12	-.10	-.75	.565
DAA	-.02	-.72	.06	.510
DAN	.05	-.79	.03	.670
DAV	.11	-.75	-.11	.672
DAL	-.04	-.85	-.02	.700
Percent Variance in Factor	42.18	12.53	8.65	
Cumulative Percent of Trace	42.18	54.72	63.28	

Table F. XLII: Oblique Primary Factors of Intellectual Variables: Females

Variable	Loading on Factor			h^2
	I	II	III	
PVR	-.33	.19	-.32	.378
EA	-.78	.12	.04	.736
SSA	-.90	-.01	.02	.790
SA	-.91	-.04	-.01	.800
MA	-.89	-.02	-.00	.776
AA	-.99	.01	.01	.990
PO	-.14	-.26	.42	.246
RLB	.03	-.21	-.89	.758
DAA	-.04	-.71	-.01	.477
DAN	.05	-.78	-.08	.639
DAV	.02	-.87	-.11	.755
DAL	-.04	-.87	-.03	.698
Percent Variance in Factor	47.14	11.23	8.66	
Cumulative Percent of Trace	47.14	58.37	67.03	

Table F. XLIII: Oblique Primary Factors of Intellective Variables
Without Attainment Average: All Subjects

Variable	Loading on Factor		h^2
	I	II	
PVR	-.61	-.01	.360
EA	-.77	.10	.686
SSA	-.85	.00	.719
SA	-.87	-.02	.740
MA	-.83	.00	.687
PO	.08	-.10	.247
RLB	-.17	-.25	.465
DAA	-.01	-.70	.490
DAN	.07	-.75	.614
DAV	.07	-.80	.712
DAL	-.02	-.83	.681
Percent Variance in Factor	40.73	11.64	
Cumulative Percent of Trace	40.73	52.37	

Table F. XLIV: Oblique Primary Factors of Intellective Variables: Juniors

Variable	Loading on Factor		h^2
	I	II	
PVR	-.62	-.04	.361
EA	-.74	.14	.687
SSA	-.81	.04	.698
SA	-.87	-.05	.717
MA	-.85	.00	.737
AA	-.96	.03	.967
PO	.17	-.06	.453
RLB	-.32	-.36	.108
DAA	.12	-.59	.435
DAN	.11	-.74	.651
DAV	.00	-.88	.772
DAL	.03	-.82	.703
Percent Variance in Factor	46.34	11.01	
Cumulative Percent of Trace	46.34	57.35	

Table F.XLV: Oblique Primary Factors of Intellectual Variables: Seniors

Variable	Loading on Factor										h ²
	I	II	III	IV	V	VI	VII	VIII	IX	X	
PVR	-.45	.09	-.02	.11	-.16	.08	-.02	.15	.12	-.15	.464
EA	-.79	-.06	-.02	.09	.03	-.05	.00	-.07	-.02	.03	.737
SSA	-.85	-.02	.06	.01	.05	-.03	.05	-.04	-.01	.02	.754
SA	-.87	.04	.01	.06	.03	-.01	-.04	.04	-.03	-.00	.789
MA	-.84	-.03	-.03	-.06	-.06	.04	.00	.02	-.05	-.04	.689
AA	-.98	-.02	.01	.02	.01	-.01	.00	-.02	-.03	-.00	.984
PO	.00	.01	.04	.09	.01	-.03	-.22	.00	-.06	.64	.610
RLB	-.01	.03	.02	.17	.73	-.09	.16	.27	.06	.04	.619
DAA	-.03	-.01	.03	-.81	.01	-.17	.02	-.06	.03	.07	.648
DAN	.06	-.13	-.03	-.81	-.17	-.05	.10	-.01	-.02	-.08	.650
DAV	.20	-.00	.06	-.65	.06	.01	-.09	.05	-.04	-.07	.670
DAL	-.00	-.02	.04	-.79	.03	-.05	-.05	-.04	-.12	-.01	.677
A	.01	.17	-.21	-.11	-.03	.02	-.03	.28	.02	.02	.569
B	.02	-.02	-.14	.00	-.02	.01	.11	-.04	.04	.65	.579
C	.08	.43	.06	.03	-.09	-.29	.18	-.10	-.16	.00	.552
D	.02	-.06	-.71	.01	.11	.04	.01	.02	-.03	.03	.554
E	-.05	.11	-.55	.03	-.03	-.20	-.00	.29	.05	.13	.545
F	-.02	.13	-.51	-.03	-.05	-.09	-.01	.20	.06	-.07	.458
G	.07	-.11	-.61	.12	-.04	.09	.07	.18	.04	.00	.594
H	.04	-.00	-.04	.03	.05	.05	.76	.09	-.00	-.00	.623
I	.05	.01	.01	.16	-.52	-.23	.20	-.01	-.06	.03	.581
J	-.07	.08	-.15	.16	.60	-.09	.03	-.06	-.19	.08	.572
K	-.06	.10	-.02	-.05	.09	.04	.71	-.08	-.09	-.12	.588
L	.07	-.06	.08	.10	-.38	-.21	.02	.25	-.15	.05	.595
M	-.08	.07	-.01	-.31	-.06	.14	.11	-.18	-.51	.01	.504
N	-.03	.04	-.01	-.07	.02	.32	.05	-.04	-.61	.01	.508
O.1	-.03	-.09	-.24	-.08	-.06	.11	.07	.39	-.10	.21	.460
O.2	-.04	.27	.15	-.13	-.16	.16	.02	.15	.15	.39	.645
O.3	-.06	.14	.05	-.23	-.04	-.10	.01	.28	-.14	-.18	.375
O.4	-.04	.17	.03	.10	.12	-.20	-.15	.01	-.27	.31	.404

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Table F.XLV contd....

Variable	I	II	III	IV	V	VI	VII	VIII	IX	X	h^2
O.5	.11	.20	-.09	.19	-.11	.21	-.21	.09	-.32	-.14	.690
O.6	-.00	-.18	.02	.11	-.10	-.00	.04	.22	-.63	-.02	.583
O.7	-.08	-.13	.06	-.10	.16	-.08	-.07	.36	-.54	.01	.622
P.1	-.07	-.02	-.04	-.16	-.70	.21	-.05	-.27	-.04	.12	.582
P.2	.04	.01	-.01	.18	-.12	.72	.06	.03	-.19	-.04	.560
P.3	.01	.08	.04	-.00	-.03	.56	-.01	.23	-.01	.09	.701
P.4	.06	-.00	.01	.23	.02	.33	.15	-.28	-.24	.03	.472
P.5	.03	-.07	-.02	.16	.17	.09	-.02	.73	-.11	-.05	.570
Q.1	.02	.69	-.18	-.02	.03	-.01	-.12	-.06	.03	-.14	.533
Q.2	-.04	.71	.13	.07	-.02	.08	.09	.00	.11	.02	.492
Q.3	.06	.71	.06	.10	.13	.05	.06	-.01	.05	-.02	.548
R	.01	.08	-.02	-.19	.23	.13	.13	.51	.01	.07	.495
Percent Variance in Factor 13.64		6.31	5.32	4.70	4.17	3.60	3.14	2.92	2.73	2.68	
Cumulative Percent of Trace 13.64		19.95	25.28	29.97	34.14	37.74	40.88	43.80	46.52	49.21	

Table F.XLVI: Oblique Primary Factors of the Non-Intellective Variables:
Males

Loading on Factor

Variable	I	II	III	IV	V	VI	VII	VIII	IX	X	h^2
RLPP	.26	.00	.18	.08	.15	-.13	-.11	-.80	.07	-.07	.714
DD	-.13	.04	-.06	-.05	.03	.11	.03	.11	.40	-.06	.598
ATD	-.01	.03	.01	.03	-.05	.05	.14	-.23	-.40	.18	.524
HR	.08	-.01	.06	-.14	-.06	.05	.04	.05	.18	-.08	.742
ASE	.06	-.16	-.06	.06	.07	-.10	-.08	-.06	-.05	.54	.456
ASM	-.22	.13	-.19	-.10	.15	.08	.09	.14	-.02	.57	.563
AT	.02	.13	-.37	-.06	-.02	-.08	-.07	-.12	-.15	.09	.368
PTA	-.00	.04	-.63	-.05	-.09	.07	.00	.08	-.00	-.08	.425
IF	-.05	-.00	-.70	.06	.15	.05	.03	.09	-.12	.00	.537
PO	.20	-.05	-.22	.03	-.02	.00	-.11	.17	-.10	-.20	.565
AV	-.08	-.10	.36	.15	-.03	.04	.36	-.02	-.47	-.02	.457
RLB	.00	.13	-.03	-.05	.09	-.11	-.02	-.77	-.02	-.02	.722
AAC	.05	-.11	-.44	.01	-.17	-.11	-.04	.06	-.03	.11	.583
AAP	-.15	-.03	-.38	.03	-.05	-.04	-.08	.15	-.39	-.01	.441
AGC	.02	-.01	-.09	.07	-.13	-.08	.01	.08	-.62	-.11	.558
SOI	-.19	.08	-.20	.09	.70	.01	-.22	-.11	.05	.03	.496
STI	-.16	-.00	-.66	-.00	.09	-.03	-.03	-.01	.13	.18	.508
A	-.01	-.17	-.01	-.03	.63	-.10	.02	-.12	.07	.04	.506
B	-.00	-.07	.15	.02	-.07	-.82	-.18	-.06	-.23	.11	.730
C	.04	.04	-.09	-.01	.02	-.33	.55	.13	.04	-.12	.637
D	-.13	-.04	.05	-.04	.09	-.29	-.75	-.04	.06	-.12	.628
E	.03	.13	.16	-.11	-.08	-.35	.12	.36	.08	.13	.604
F	-.17	-.03	.28	.18	.51	-.12	-.13	.16	-.00	.07	.531
G	-.01	.08	-.23	-.08	-.13	-.78	-.04	-.20	-.00	-.06	.735
H	-.13	.02	-.00	.02	.31	-.71	.18	-.03	.05	-.11	.745
I	-.27	-.36	-.24	.15	-.08	.09	.17	-.21	.34	-.01	.555
J	.01	-.18	.00	.14	-.44	-.08	-.12	.01	.17	.02	.595
O	-.27	.04	.10	.05	-.10	.11	-.42	-.06	.02	.01	.500
Q2	.13	-.05	-.00	.08	-.71	-.14	.04	.04	-.02	.10	.561
Q3	.06	.09	-.40	-.02	-.09	-.21	.24	-.05	.07	.07	.518
Q4	-.07	-.00	-.06	-.06	.03	.04	-.75	-.00	.06	-.04	.607

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Table F.XLVI contd....

Variable	I	II	III	IV	V	VI	VII	VIII	IX	X	h^2
HS	.15	.01	-.42	.01	.27	.04	.05	-.08	-.06	-.14	.483
FR	-.82	.10	-.03	.02	.09	.04	.01	.22	.01	.04	.712
SR	-.28	.08	.05	-.02	-.69	.02	-.06	.04	-.14	-.03	.726
ES	-.71	-.04	-.10	-.03	-.16	-.06	-.28	-.05	-.03	-.04	.723
C	-.79	.05	.09	.04	.18	-.09	-.01	.07	.00	-.03	.692
R	-.84	.05	-.07	.00	-.05	-.00	-.15	.03	.04	-.07	.800
M	-.62	-.06	.03	-.05	-.36	-.05	.04	-.00	.02	-.07	.623
L	-.36	.04	.01	-.03	-.64	.03	-.06	.06	-.08	-.05	.705
SE	.29	-.02	-.38	.02	.24	.02	.15	.13	-.06	-.08	.541
FSO	.35	-.03	-.03	.02	.04	.05	-.22	-.02	.01	.09	.474
CL	-.03	-.27	-.02	-.84	.01	-.06	-.07	.02	.03	-.15	.804
CMP	.05	-.14	-.02	-.82	-.03	.02	-.04	.05	.14	.10	.775
PRC	-.10	.73	-.01	.31	-.07	-.00	.05	-.01	.00	-.30	.818
SCI	.14	-.20	.01	.07	-.04	.02	.06	.04	.03	.78	.723
MCD	-.07	.83	.00	.17	.00	.01	.04	-.03	.02	-.03	.739
PRS	-.07	-.25	.04	-.48	.18	-.00	-.08	-.01	-.21	-.45	.669
SRV	-.27	-.53	-.04	.01	.02	-.01	.29	-.16	-.08	.01	.611
LIT	.08	-.78	.08	.13	-.00	.05	-.05	.12	-.03	-.07	.651
ART	.02	-.40	-.11	.56	.07	-.07	-.13	.16	-.01	.03	.752
ODR	.02	.54	-.05	.39	-.05	-.01	.01	-.08	-.04	-.24	.644
Percent Variance in Factor 13.44		7.83	5.34	4.28	4.07	3.59	3.36	3.02	2.64	2.51	
Cumulative Percent of Trace 13.44		21.27	27.61	31.88	35.95	39.54	42.91	45.93	48.67	51.18	

Table F.XLVII: Oblique Primary Factors of Non-Intellective Variables:
Females

Variable	Loading on Factor										h ²
	I	II	III	IV	V	VI	VII	VIII	IX	X	
RLPP	-.10	.14	-.12	-.09	.12	.06	.09	.03	-.75	.24	.694
DD	.17	.07	-.01	-.03	-.29	.02	.16	.10	-.06	-.16	.539
ATD	-.10	.15	.03	.10	.30	.08	.11	-.06	.13	.20	.566
HR	.02	-.03	-.00	-.07	.06	-.12	-.11	.05	-.25	-.10	.690
ASE	-.02	-.02	-.16	-.08	.15	.40	.01	.22	.12	-.02	.446
ASM	.04	-.27	.07	.06	.08	.25	.03	-.00	.06	-.17	.423
AT	-.09	-.50	-.03	-.02	.18	-.06	.09	.05	-.02	.02	.559
PTA	.02	-.69	-.02	-.01	.10	-.06	.08	.02	.01	-.11	.627
IF	-.01	-.62	-.00	-.18	.16	-.05	-.01	.09	.10	.00	.590
PO	-.14	-.20	-.08	-.12	-.16	-.14	.07	.20	.29	.15	.673
AV	-.09	-.25	-.02	-.27	-.03	.07	.05	.06	.16	.06	.720
RLB	.02	-.16	-.08	-.03	-.04	-.02	.01	.11	-.72	.05	.629
AAC	.05	-.36	.03	.08	.53	.00	-.05	.11	-.10	-.01	.576
AAP	-.25	-.33	-.02	-.09	.46	.04	-.05	-.15	-.04	.03	.546
AGC	-.01	-.14	.09	-.08	.81	-.06	-.06	-.18	-.03	-.13	.649
SOI	-.23	-.16	.06	-.54	-.08	.00	-.06	-.07	-.16	-.07	.599
STI	.08	-.59	.04	.07	-.09	.15	-.05	.04	-.13	-.02	.516
A	.09	.01	.06	-.76	.25	.03	.06	.21	.03	-.16	.648
B	-.10	.22	-.06	-.15	.32	.20	-.14	.13	-.06	.24	.433
C	.64	-.05	-.01	-.02	-.12	-.04	.00	-.11	-.03	.19	.584
D	-.74	.00	-.05	.00	-.07	.05	-.01	.00	.03	-.01	.580
E	.38	.11	.03	-.02	.14	.18	-.10	-.61	-.01	-.13	.490
F	-.22	.03	-.24	-.62	-.01	.03	-.05	-.32	-.03	-.16	.638
G	.13	-.26	-.02	.13	.02	.04	.06	.38	-.04	.30	.593
H	.54	-.02	-.07	-.60	.03	.05	-.06	-.15	-.02	-.18	.671
I	-.04	-.06	-.09	.08	-.12	.05	-.15	.67	.02	.02	.570
J	-.17	-.15	-.11	.42	-.12	.22	-.23	-.09	.03	-.14	.466
O	-.58	.13	-.03	.24	.04	.03	.02	.02	-.13	-.01	.536
Q.2	.06	-.02	-.04	.69	-.09	.08	-.09	.02	-.02	.04	.536
Q.3	.46	-.21	-.03	.08	.00	-.02	.11	.16	.04	.06	.503
Q.4	-.75	-.05	.07	.14	.04	.09	-.10	.08	-.06	.05	.565

contd.....

Table F.XLVII contd.....

Variable	I	II	III	IV	V	VI	VII	VIII	IX	X	h^2
HS	-.06	-.31	-.01	-.19	-.16	-.06	.00	-.06	.01	.55	.591
FR	.00	-.06	.01	-.12	.04	-.02	.04	-.08	.11	-.91	.728
SR	-.29	.06	.06	.78	.03	-.16	-.02	-.01	.05	.08	.755
ES	-.42	-.11	.00	.17	.03	.01	-.00	.16	.02	-.58	.757
C	.03	.01	-.06	-.29	.04	.04	.06	-.05	.08	-.95	.766
R	-.27	-.12	-.05	.10	-.07	-.04	.05	-.03	.04	-.71	.774
M	-.06	.04	.01	.41	.03	-.04	-.01	.13	-.01	-.51	.633
L	-.20	.02	.04	.72	.02	-.14	-.00	.01	.03	-.09	.691
SE	.16	-.34	.03	-.35	-.03	.02	-.04	-.07	.07	.33	.665
FSO	.21	-.01	-.21	.02	.28	-.02	-.12	.18	.09	-.06	.438
CL	-.05	.04	.82	.06	.06	-.20	.07	-.12	.10	.06	.808
CMP	.06	-.04	.85	.14	.11	.16	.19	-.32	.02	.05	.770
PRC	.09	-.03	-.23	.23	-.02	-.85	-.24	-.00	.03	.07	.739
SCI	-.01	-.04	-.16	.04	-.04	.79	.13	-.30	-.00	.07	.751
MCD	-.12	-.02	-.22	-.12	-.14	.34	.72	.14	.06	-.10	.667
PRS	-.03	.04	.38	-.34	-.01	-.24	-.24	.20	.01	-.09	.601
SRV	.02	.02	-.19	-.15	-.01	-.20	.34	.62	-.21	-.14	.721
LIT	-.05	.08	-.04	-.13	-.14	.44	-.50	.21	-.07	.07	.687
ART	.02	.02	-.41	.02	.07	-.22	-.71	-.04	.16	.03	.688
ODR	.06	.00	-.70	.13	.07	-.24	.08	-.17	-.09	.03	.625
Percent Variance in Factor	14.92	7.63	5.55	5.03	3.83	3.50	3.13	2.89	2.43	2.38	
Cumulative Percent of Trace	14.92	22.65	28.20	33.23	37.06	40.57	43.70	46.59	49.02	51.40	

Table F.XLVIII: Oblique Primary Factors of Non-Intellective Variables:
Juniors

Variable	Loading on Factor										h ²
	I	II	III	IV	V	VI	VII	VIII	IX	X	
RLPP	.20	.18	.19	-.01	-.16	.20	-.19	.00	-.05	.79	.627
DD	-.22	.03	.16	.04	-.18	-.02	.36	-.09	.03	.02	.544
ATD	.30	-.07	.00	.11	.23	-.02	-.31	-.01	.15	.05	.566
HR	-.06	-.08	.08	-.02	-.02	-.10	.20	-.08	-.15	.11	.374
ASE	.05	.10	-.12	.57	-.16	.09	-.13	.14	-.04	.04	.471
ASM	-.17	-.03	-.23	.44	-.00	.07	-.02	-.04	.19	-.24	.636
AT	.01	.00	-.38	.03	.01	.03	-.15	.11	.13	.18	.550
PTA	-.14	-.06	-.62	-.01	-.05	-.02	.12	-.07	.08	-.06	.593
IF	-.08	.03	-.73	-.05	-.01	.14	.06	-.04	.01	-.09	.530
PO	.11	-.01	-.25	-.12	-.07	.10	-.05	.05	-.05	-.15	.370
AV	.18	.15	.21	-.05	-.15	.10	-.02	-.04	-.01	-.25	.409
RLB	-.01	.11	-.05	-.08	-.16	.06	-.06	-.02	-.09	.76	.631
AAC	.07	-.01	-.60	.05	-.15	-.19	-.03	.08	-.08	-.04	.619
AAP	-.01	.13	-.43	-.00	-.27	-.00	-.13	.05	.02	-.15	.396
AGC	.11	.10	-.43	-.16	.09	-.09	-.14	-.00	-.16	-.09	.567
SOI	-.33	-.07	-.20	-.08	.23	.64	-.26	-.05	.06	.17	.580
STI	-.26	-.09	-.56	.13	-.02	.07	.14	-.00	-.01	.19	.511
A	-.00	.00	-.05	.06	-.31	.64	.01	.14	-.01	-.02	.574
B	.13	.02	.08	.04	-.03	.02	-.29	.84	-.01	-.07	.741
C	.08	.00	-.01	-.10	.08	.02	.64	.24	.01	-.06	.619
D	-.17	-.07	.13	.02	.19	.01	-.72	.33	-.03	-.09	.656
E	-.08	-.08	.19	.09	.52	-.07	.24	.20	-.12	-.17	.522
F	-.24	.19	.19	.08	.19	.57	-.13	.05	-.09	-.13	.560
G	.10	-.05	-.17	-.02	-.15	-.13	.06	.77	.10	.07	.756
H	-.14	.00	.07	-.07	.12	.36	.29	.62	-.01	-.00	.760
I	-.05	.13	-.08	.00	-.80	-.08	.09	.07	-.04	.08	.613
J	-.18	.07	-.01	.14	.27	-.42	-.12	-.00	-.24	.03	.424
O	-.13	.05	.17	-.01	-.06	-.16	-.52	-.03	.04	.03	.515
Q.2	.05	.00	-.00	.05	.21	-.67	-.00	.09	-.08	.01	.487
Q.3	.09	.01	-.31	.06	-.09	-.11	.39	.18	.07	.03	.444
Q.4	-.05	-.10	.00	.01	.06	-.10	-.74	.09	.05	.08	.624

contd.....

Table F.XLVIII contd....

Variable	I	II	III	IV	V	VI	VII	VIII	IX	X	h^2
HS	.21	-.08	-.36	-.11	.15	.18	.11	-.04	-.07	.08	.458
FR	-.83	.02	-.06	-.02	.02	.06	-.02	-.08	.04	-.15	.724
SR	-.09	-.03	.01	-.12	-.05	-.76	-.18	.00	.01	-.12	.731
ES	-.65	-.01	-.12	-.04	-.17	-.23	-.31	.03	-.02	.03	.742
C	-.81	.06	.05	.00	.01	.22	-.02	-.02	-.02	-.03	.737
R	-.81	.01	-.07	-.07	.01	-.12	-.15	-.06	-.01	-.00	.795
M	-.49	.00	.04	-.07	-.17	-.42	-.01	.02	-.01	.02	.618
L	-.20	-.04	.00	-.10	-.06	-.72	-.12	.01	-.00	-.11	.698
SE	.20	-.01	-.39	-.05	.18	.29	.24	-.05	-.10	-.01	.588
FSO	.12	.12	-.21	.22	.15	-.01	-.04	-.12	-.14	-.06	.347
CL	.04	-.85	-.01	-.21	-.09	-.00	-.08	.05	-.01	-.11	.807
CMP	.02	-.90	-.02	.11	.26	-.09	-.04	-.03	.04	-.11	.780
PRC	-.04	.32	-.06	-.62	.17	-.18	.10	.03	.30	-.04	.748
SCI	.08	.09	.06	.84	.08	.07	-.01	-.03	-.03	-.06	.724
MCD	-.01	.35	.03	.00	-.08	.10	.01	.04	.71	-.09	.661
PRS	-.01	-.38	-.01	-.38	-.16	.20	-.11	-.01	-.17	-.04	.554
SRV	-.08	.05	.03	-.00	-.74	.08	.10	.06	-.02	.16	.558
LIT	.03	.08	.06	.17	-.17	.03	.05	-.07	-.72	.09	.645
ART	-.08	.43	-.17	-.09	.04	-.04	.02	.08	-.61	-.07	.693
ODR	-.01	.41	-.01	-.15	.48	-.08	.03	-.07	.18	.16	.664
Percent Variance in Factor 13.80		7.08	6.43	4.61	4.24	3.58	3.22	3.04	2.73	2.59	
Cumulative Percent of Trace 13.80		20.87	27.31	31.92	36.16	39.74	42.97	46.01	48.74	51.33	

Table F.II: Oblique Primary Factors of Non-Intellective Variables:
Seniors

Variable	I	II	III	IV	V	VI	VII	VIII	IX	X	h^2
RLPP	-.10	.00	.18	-.00	.02	.14	.87	.15	-.04	.02	.732
DD	.10	.07	.09	-.07	.16	-.22	.02	.13	.00	-.27	.648
ATD	.06	-.11	-.07	-.00	-.08	-.07	.12	-.17	-.15	.54	.627
HR	-.09	.12	-.08	.07	.03	.08	-.10	.04	.15	-.31	.657
ASE	-.12	-.04	-.08	.10	.02	-.01	.02	.14	-.53	.08	.524
ASM	.12	-.05	-.33	-.10	-.02	-.32	-.14	-.04	-.39	.14	.387
AT	-.09	-.01	-.62	-.04	.03	.07	-.13	-.07	-.12	.06	.510
PTA	.02	-.01	-.77	.02	-.04	-.08	-.01	-.12	-.09	.03	.580
IF	.02	-.02	-.79	.04	-.08	-.06	-.06	.14	-.14	.10	.604
PO	-.08	.14	-.08	.07	.14	.28	-.15	.06	.02	-.06	.604
AV	.23	.15	.20	.18	.08	-.12	-.17	.11	.13	.36	.519
RLB	-.02	.14	-.10	-.03	.18	-.10	.65	.14	-.07	.01	.707
AAC	-.13	.08	-.42	.11	.05	.13	.02	-.06	-.30	.35	.576
AAP	-.28	.17	-.26	.01	.15	.14	-.18	.09	-.06	.30	.465
AGC	-.06	-.11	-.13	.03	.13	-.01	.02	-.02	-.00	.67	.665
SOI	-.18	-.10	-.15	.01	.01	-.15	.15	.68	.17	-.00	.509
STI	-.00	.20	-.57	.02	-.01	-.14	-.04	.04	-.37	-.07	.574
A	.08	.36	.06	-.04	.00	-.09	.09	.70	.01	.10	.621
B	-.04	.09	.29	.08	-.08	.33	.13	.02	-.37	.29	.494
C	.66	-.16	-.08	-.02	-.02	.09	-.04	.00	-.10	-.13	.610
D	-.73	-.19	-.03	-.02	-.19	-.02	.04	.10	.18	-.02	.617
E	.28	-.60	.03	-.12	-.05	-.07	-.11	-.06	-.12	-.14	.533
F	-.17	-.27	.14	.16	-.07	-.24	-.04	.60	.16	-.03	.554
G	.07	.22	-.28	.01	.05	.29	.29	-.09	-.30	.07	.597
H	.53	-.12	-.06	.09	-.10	-.12	.08	.45	-.03	-.07	.648
I	-.03	.82	-.03	.18	-.10	.02	.00	-.01	-.02	.02	.642
J	-.11	-.11	-.16	.15	-.37	-.09	.05	-.45	-.10	-.18	.518
O	-.59	.07	.09	.03	.04	-.10	.04	-.14	.09	.02	.550
Q.2	.14	-.07	-.11	.08	-.22	.06	.01	-.78	-.19	-.08	.625
Q.3	.35	.07	-.27	-.00	.11	.07	.13	-.06	-.27	-.10	.543
Q.4	-.80	-.10	-.10	-.11	-.02	.01	.05	.07	.07	-.04	.584

contd.....

Table F.II contd.....

Variable	I	II	III	IV	V	VI	VII	VIII	IX	X	h^2
HS	.02	-.06	-.34	.00	.05	.31	-.07	.32	.03	.05	.527
FR	-.06	-.00	-.06	.02	.03	-.83	-.13	.09	.19	-.10	.718
SR	-.30	-.07	.07	-.08	.10	.07	-.07	-.72	.07	.02	.757
ES	-.55	.13	-.10	.02	.01	-.48	.08	-.08	.13	-.00	.726
C	-.04	.04	.02	.11	.01	-.85	-.00	.20	.19	-.02	.728
R	-.37	-.09	-.10	.03	.05	-.69	-.01	-.02	.22	-.15	.757
M	-.16	.20	.02	-.00	-.01	-.45	-.02	-.36	.08	-.08	.624
L	-.27	-.00	.02	-.05	.10	-.10	-.07	-.65	.08	-.01	.704
SE	.29	-.16	-.36	-.01	-.03	.22	-.14	.30	-.11	.07	.632
FSO	-.08	-.17	-.08	.14	-.12	.15	.35	-.01	-.22	-.05	.564
CL	-.09	.01	.04	-.84	-.14	.09	-.02	-.03	.25	.08	.819
CMP	-.02	-.27	.03	-.90	-.04	.07	.02	-.04	-.12	-.04	.786
PRC	.06	-.22	.00	.32	.52	-.03	.04	-.13	.47	-.12	.749
SCI	-.06	-.15	.09	-.01	.00	.03	-.08	.03	-.80	.04	.734
MCD	-.00	.01	.07	.23	.79	-.05	.01	.09	-.01	-.03	.676
PRS	-.00	.10	-.15	-.31	-.35	-.07	.10	.19	.45	.17	.603
SRV	.17	.69	-.07	.11	-.17	-.15	.05	.04	-.04	.20	.618
LIT	-.01	.35	-.02	.21	-.71	.01	-.09	.03	-.08	.02	.651
ART	-.09	.07	.05	.51	-.40	.12	-.11	.00	.04	.02	.785
ODR	.08	-.48	-.12	.42	.24	-.06	.09	-.14	.08	-.19	.665
Percent Variance in Factor	14.11	7.50	6.86	4.53	4.21	3.51	3.03	2.96	2.68	2.48	
Cumulative Percent of Trace	14.11	21.61	28.46	33.00	37.21	40.71	43.74	46.70	49.38	51.86	

Table F.L: Orthogonal Factor Matrix (Varimax) of the Non-Intellective
Variables: All Subjects.

Variable	I	II	III	IV	V	VI	VII	VIII	IX	X	h ²
RLPP	.11	.22	-.15	-.11	.17	.08	-.32	-.36	.05	.42	.698
DD	-.02	.08	.07	-.22	-.02	-.07	.19	.18	.08	.23	.412
ATD	-.06	-.06	-.08	.55	.00	.17	-.13	-.13	.06	-.04	.496
HR	-.03	.02	.05	-.61	-.02	-.09	.02	.06	-.02	.00	.519
ASE	.05	.11	-.12	.02	.08	.60	-.10	-.04	-.09	-.10	.428
ASM	-.02	-.05	-.22	.14	-.09	.38	.14	.10	.08	-.06	.381
AT	.01	-.01	-.47	-.07	-.02	.09	-.13	-.07	.11	-.15	.294
PTA	-.03	.01	-.64	.07	-.03	-.04	-.04	.08	.01	-.07	.457
IF	.17	-.00	-.64	-.04	.01	-.01	-.13	.10	.06	-.20	.533
PO	.10	.07	-.10	-.03	-.01	-.13	-.17	.02	-.00	-.23	.496
AV	.12	.10	.22	.58	.08	-.03	.03	.05	-.01	-.09	.453
RLB	.02	.21	-.27	-.50	.08	.01	-.15	-.20	.10	.26	.636
AAC	-.10	.14	-.43	-.03	.01	.21	-.18	-.02	-.01	-.41	.560
AAP	.04	.21	-.16	-.06	-.00	.06	-.03	-.09	.05	-.53	.417
AGC	-.01	-.04	-.14	.11	.05	.00	-.10	-.09	.02	-.50	.642
SOI	.59	-.07	-.16	.12	.00	-.06	.09	-.17	-.05	.09	.522
STI	.02	.11	-.61	-.05	-.04	.18	.01	.09	-.03	.05	.471
A	.65	.33	-.01	.00	-.11	.08	-.07	.10	-.05	-.10	.588
B	.10	.03	.08	-.54	.05	.33	-.19	-.03	-.05	-.33	.689
C	.10	-.19	-.14	-.26	.03	.00	-.21	.65	.04	.06	.625
D	.04	-.13	.12	-.45	-.02	.01	.17	-.58	-.11	-.09	.656
E	-.02	-.56	.11	-.25	-.01	.13	.03	.34	-.04	.07	.552
F	.55	-.23	.28	-.05	.15	.02	.21	-.05	-.14	-.02	.547
G	-.02	.13	-.36	-.33	.00	.24	-.29	.13	.11	-.17	.703
H	.49	-.18	-.07	-.24	.06	.11	-.07	.46	-.04	.01	.717
I	-.04	.71	-.04	-.24	.01	-.00	.04	-.05	-.09	-.08	.621
J	-.41	-.21	-.06	.00	.14	.11	.16	-.17	-.26	.16	.439
O	-.22	.10	.20	.03	.04	-.04	.25	-.58	.02	-.01	.514
Q.2	-.65	-.17	-.08	.02	.10	.13	.01	.00	-.07	.08	.530
Q.3	-.06	.04	-.42	.05	.03	.14	-.23	.37	.10	.03	.455
Q.4	-.08	-.01	.02	.00	-.08	.01	.13	-.70	-.03	-.07	.586

contd.....

Table EL contd.....

Variable	I	II	III	IV	V	VI	VII	VIII	IX	X	h^2
HS	.29	-.08	-.38	.01	-.03	-.12	-.38	.12	-.04	-.09	.466
FR	-.01	-.04	.11	.02	-.00	-.06	.80	-.06	.01	.06	.679
SR	-.72	.00	.12	-.01	-.01	-.11	.22	-.29	.08	-.09	.710
ES	-.23	.17	.02	-.05	-.02	-.03	.63	-.46	-.03	-.02	.719
C	.14	-.00	.17	.00	.05	-.05	.77	-.09	-.01	.11	.715
R	-.16	-.04	.06	-.01	.02	-.12	.78	-.31	.00	.12	.775
M	-.43	.15	.11	-.01	-.01	-.03	.58	-.17	.00	.06	.614
L	-.66	.03	.08	-.01	-.02	-.07	.37	-.24	.07	-.04	.661
SE	.35	-.17	-.38	.03	-.01	-.03	-.39	.33	-.08	-.11	.600
FSO	-.03	-.13	-.19	.16	.14	.16	-.22	-.06	-.14	.06	.362
CL	.05	.12	-.00	-.03	-.86	-.19	.00	-.07	-.01	-.05	.810
CMP	-.05	-.19	-.10	-.03	-.84	.11	-.05	.01	.07	.11	.785
PRC	-.14	-.24	.04	.02	.40	-.56	.07	.05	.40	-.06	.748
SCI	-.05	-.11	-.03	.01	.05	.77	-.13	.06	-.05	.07	.713
MCD	-.00	-.01	.04	.02	.34	-.03	.02	.04	.72	-.09	.667
PRS	.29	.19	.00	.00	-.41	-.37	.03	-.09	-.23	-.07	.545
SRV	.08	.69	-.04	.02	-.05	.03	.07	.00	-.10	.01	.532
LIT	.10	.26	.06	-.02	.03	.13	-.01	-.02	-.73	.05	.639
ART	.04	-.02	.08	-.02	.40	-.06	-.01	-.00	-.57	-.18	.622
ODR	-.13	-.48	-.07	.01	.54	-.12	-.03	.04	.21	.13	.642
Percent Variance in Factor	13.67	7.05	6.45	4.57	4.42	4.06	3.26	3.03	2.60	2.51	
Cumulative Percent of Trace	13.67	20.71	27.16	31.73	36.16	40.22	43.48	46.51	49.11	51.62	

APPENDIX G

TABLES OF REGRESSION ANALYSES
WITH HOME ENVIRONMENT VARIABLES
AS PREDICTORS

Table G. LI: The Relationships between Home Environment and Aptitude in Females

N = 865		Dependent Variable = DAL			
		Simple	Normalized	Partial	Coefficient
		Corr.	Regr.	Corr.	of
		Coeff.	Coeff.	Coeff.	Contribution
		r	Beta	$r_{12.3}$	$rB \times 100$
PPM5	Mother demand	-.06	-.07	-.06	0.42
FED	Fathers education	.18	.15	.15	2.70
UR	Urban residence	.04	.05	.05	0.20
NSSA	Non-state primary	.03	.01	.01	0.03
FMS	Family size	-.05	-.03	-.03	0.15
FPH	Father absent	-.07	-.06	-.06	0.42
FPA	Father deceased	-.04	-.02	-.02	0.08
FRM	Respect from mother	-.03	-.03	-.03	0.09
RPM	Respect for mother	-.06	-.12	-.09	0.72
PA3	Parent attitude - non-smoking	.06	.06	.06	0.36
PA4	Parent attitude - chores	.14	.11	.10	1.54
PPF1	Father support	.10	.02	.02	0.20
PPF3	Father permissive/non-intrusive	.05	.04	.04	0.20
PPF4	Father anxiety-sensitivity	-.02	.04	.03	0.08 *
PPM1	Mother support	.09	.08	.05	0.72
PPM4	Mother anxiety-sensitivity	-.09	-.07	-.05	0.63
Multiple R = 0.2888				$100R^2 = 8.34$	
				$SD_y = 9.31$	

Table G. LII: The Relationships between Home Environment and Aptitude in Males

Dependent Variable = DAL					
N = 1062		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$rB \times 100$
PPM5	Mother demand	.02	-.03	-.03	0.06*
FEO	Fathers education	.16	.14	.14	2.24
NSSA	Non-state primary	.07	.02	.02	0.14
FMS	Family size	-.09	-.06	-.06	0.54
FPH	Father absent	-.07	-.07	-.07	0.49
FPA	Father deceased	-.08	-.06	-.07	0.48
RPM	Respect for Mother	.04	-.03	-.03	0.12*
PAS	Parent attitude- companionship	.01	.03	.03	0.03
PA1	Parent attitude- mobility	-.07	-.06	-.06	0.42
PA3	Parent attitude- non-smoking	.04	.04	.04	0.16
PA4	Parent attitude- chores	.18	.12	.11	2.16
PPF1	Father support	.14	-.08	-.06	1.12*
PPF2	Father angry rejection	-.16	-.17	-.11	2.72
PPF3	Father permissive/ non-intrusive	.13	.07	.06	0.91
PPF4	Father anxiety- sensitivity	-.07	.02	.01	0.14*
PPM1	Mother support	.14	.11	.07	1.54
PPM4	Mother anxiety- sensitivity	-.03	.07	.06	0.21*
Multiple R = 0.3210				$100R^2 = 10.3$	$SD_y = 9.72$

Table G.LIII: The Relationship between Home Environment
and Aptitude in High Ability Students

		Dependent Variable = DAL			
N = 503		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$rB \times 100$
FE	Fathers education	.22	.15	.16	3.30
UR	Urban residence	-.03	-.02	-.03	0.06
NSSA	Non-state primary	.16	.07	.08	1.12
FPH	Father absent	-.08	-.04	-.04	0.32
FPA	Father deceased	-.10	-.06	-.06	0.60
FRM	Respect from Mother	.05	-.02	-.02	0.10*
RPM	Respect for mother	.02	-.07	-.05	0.14*
PA5	Parent attitude - companionship	-.08	-.06	-.07	0.48
PA1	Parent attitude - mobility	-.11	-.08	-.08	0.88
FA4	Parent attitude - chores	.16	.09	.09	1.44
PPF1	Father support	.19	-.03	-.03	0.57*
PPF2	Father angry rejection	-.23	-.25	-.17	5.75
PPF3	Father permissive/ non-intrusive	.22	.13	.13	2.86
FPF4	Father anxiety - sensitivity	-.05	.18	.12	0.90*
PFM1	Mother support	.20	.11	.08	2.20
PFM4	Mother anxiety - sensitivity	-.16	-.10	-.08	1.60
Multiple R = 0.4319				$100R^2 = 18.65$	$SD_y = 9.31$

Table G.IV: The Relationship between Home Environment
and Aptitude in middle Ability Students

Dependent Variable = DAL					
N = 886		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$rB \times 100$
PPM5	Mother demand	.02	-.03	-.03	0.06*
FED	Fathers education	.09	.07	.07	0.63
NSSA	Non-state primary	.09	.08	.08	0.72
FMS	Family size	-.11	-.11	-.11	1.21
FPH	Father absent	-.06	-.05	-.06	0.30
FPA	Father deceased	-.02	-.02	-.02	0.04
RPM	Respect for mother	.01	-.06	-.05	0.06 *
PA5	Parent attitude - companionship	-.10	-.08	-.09	0.80
PA3	Parent attitude - non-smoking	.10	.11	.11	1.10
PA4	Parent attitude - chores	.11	.06	.06	0.66
PPF1	Father support	.06	-.12	-.09	0.72 *
PPF2	Father angry rejection	-.09	-.15	-.10	1.35
PPF3	Father permissive/ non-intrusive	.14	.12	.11	1.68
PPF4	Father anxiety - sensitivity	.01	.09	.06	0.09
PPM1	Mother support	.09	.11	.07	0.99
PPM4	Mother anxiety - sensitivity	.02	.07	.06	0.14
Multiple R = 0.2954				$100R^2 = 8.73$	
				$SD_y = 9.33$	

Table G.LV: The Relationship between Home Environment
and Aptitude in Lower Ability Students

		Dependent Variable = DAL			
N = 538		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$r_B \times 100$
PPM5	Mother demand	-.06	-.11	-.10	0.66
FED	Fathers education	.10	.10	.10	1.00
FPH	Father absent	-.06	-.08	-.08	0.48
FRM	Respect from mother	-.02	-.07	-.05	0.14
RPM	Respect for mother	-.01	-.06	-.05	0.06
PA5	Parent attitude - companionship	-.06	-.02	-.02	0.12
PA1	Parent attitude - mobility	.12	.09	.09	1.08
PA3	Parent attitude - non-smoking	.12	.12	.12	1.44
PA4	Parent attitude - chores	.17	.12	.11	2.04
PPF1	Father support	.09	-.04	-.03	0.36 *
PPF2	Father angry rejection	-.04	-.09	-.06	0.36
PPF3	Father permissive/ non-instusive	-.03	-.03	-.03	0.09
PPF4	Father anxiety - sensitivity	.02	.04	.03	0.08
PPM1	Mother support	.13	.20	.13	2.60
PPM4	Mother anxiety - sensitivity	.02	.10	.08	0.20
Multiple R = 0.3107				$100R^2 = 9.65$	$SD_y = 8.44$

Table G.LVI: The Relationship between Home Environment and Aptitude in Lower SES Students

		Dependent Variable = DAL			
N = 1190		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$rB \times 100$
PPM5	Mother demand	-.06	-.07	-.06	0.42
FED	Fathers education	.12	.12	.11	1.44
UR	Urban residence	.05	.05	.05	0.25
FMS	Family size	-.03	-.03	-.03	0.09
FPH	Father absent	-.03	-.04	-.04	0.12
FPA	Father deceased	-.03	-.03	-.03	0.09
FRM	Respect from mother	-.05	-.09	-.07	0.45
RPM	Respect for mother	-.03	-.03	-.02	0.09
PA5	Parent attitude - companionship	-.10	-.07	-.07	0.70
PA1	Parent attitude - mobility	-.03	-.02	-.02	0.06
PA3	Parent attitude - non-smoking	.09	.09	.09	0.81
PA4	Parent attitude - chores	.11	.09	.09	0.99
PPF1	Father support	.03	-.11	-.08	0.33
PPF2	Father angry rejection	-.06	-.06	.05	0.36 *
PPF3	Father permissive/ non-intrusive	.07	.08	-.08	0.42
PPF4	Father anxiety - sensitivity	-.03	-.02	.02	0.06
PPM1	Mother support	.07	.16	.11	1.12
PPM4	Mother anxiety - sensitivity	-.02	.04	.03	0.08 *
Multiple R = 0.2681				$100R^2 = 7.19$	
				$SD_y = 9.45$	

Table G.LVII: The Relationship between Home Environment and Aptitude in Upper SES Students

		Dependent Variable = DAL			
N = 737		Simple Corr, Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$r_B \times 100$
PPM5	Mother demand	-.01	-.06	-.05	0.06
FED	Fathers education	.04	.03	.03	0.12
UR	Urban residence	.06	.03	.03	0.18
FMS	Family size	-.13	-.09	-.09	1.17
FPH	Father absent	-.08	-.07	-.07	0.56
FPA	Father deceased	-.10	-.07	-.08	0.70
FRM	Respect from mother	.05	.06	.05	0.30
RPM	Respect for mother	-.03	-.15	-.11	0.45
PA5	Parent attitude - companionship	-.05	-.05	-.05	0.25
PA3	Parent attitude - non-smoking	.10	.10	.10	1.00
PA4	Parent attitude - chores	.15	.10	.09	1.50
PPF1	Father support	.12	-.05	-.04	0.60*
PPF2	Father angry rejection	-.12	-.19	-.13	2.28
PPF3	Father permissive/ non-intrusive	.16	.08	.08	1.28
PPF4	Father anxiety - sensitivity	.00	.14	.09	0.00
PFM1	Mother support	.12	.13	.09	1.56
PFM4	Mother anxiety - sensitivity	.01	.06	.05	0.06
Multiple R = 0.3264				$100R^2 = 10.65$	$SD_y = 10.3$

Table G.LVIII: The Relationship between Home Environment
and Attainment Average in Females

		Dependent Variable = AA			
N = 865		Simple Corr. Coeff. r	Normalized Regr. Coeff. Beta	Partial Corr. Coeff. $r_{12.3}$	Coefficient of Contribution $r_B \times 100$
PPM5	Mother demand	.14	.15	.13	2.10
FED	Fathers education	-.07	-.05	-.05	0.35
UR	Urban residence	-.03	-.04	-.04	0.12
NSSA	Non-state primary	.10	.09	.09	0.90
FMS	Family size	.05	.05	.05	0.25
FFH	Father absent	.08	.08	.08	0.64
FPA	Father deceased	.02	.02	.02	0.04
FRM	Respect from mother	.05	.02	.02	0.10
RPM	Respect for mother	.07	.08	.06	0.56
PA1	Parent attitude - mobility	-.05	-.05	-.05	0.25
PA3	Parent attitude - non-smoking	-.04	-.05	-.05	0.20
PA4	Parent attitude - chores	-.09	-.09	-.08	0.81
PF1	Father support	-.04	-.03	-.02	0.12
PF2	Father angry rejection	.00	-.08	-.06	0.00*
PF4	Father anxiety - sensitivity	.07	-.10	.07	0.70*
PPM1	Mother support	-.02	-.07	-.05	0.14
PPM4	Mother anxiety - sensitivity	.04	-.03	-.02	0.12*
Multiple R = 0.2664				$100R^2 = 7.1$	
				$SD_y = 82.25$	

Table G.LIX: The Relationship between Home Environment
and Attainment Average in Males

		Dependent Variable = AA			
N = 1062		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$rB \times 100$
PPM5	Mother demand	.02	.03	.03	0.06
FED	Fathers education	-.08	-.10	-.10	0.80
UR	Urban residence	-.07	-.07	-.07	0.49
NSSA	Non-state primary	.12	.14	.14	1.68
FMS	Family size	.09	.06	.06	0.54
FPH	Father absent	.02	.02	.02	0.04
FPA	Father deceased	.12	.12	.13	1.44
RPM	Respect for mother	-.01	-.02	-.01	0.02
PA1	Parent attitude - mobility	.04	.05	.05	0.20
PA3	Parent attitude - non-smoking	-.05	-.07	-.07	0.35
PA4	Parent attitude - chores	-.07	-.06	-.06	0.42
PPF1	Father support	-.02	.06	.05	0.12*
PPF3	Father permissive/ non-intrusive	-.03	-.04	-.03	0.12
PPF4	Father anxiety - sensitivity	.02	.05	.04	0.10
PPM1	Mother support	-.03	-.04	-.03	0.12
PPM4	Mother anxiety - sensitivity	.02	-.05	-.04	0.10*
Multiple R = 0.2547				$100R^2 = 6.49$	$SD_y = 68.99$

Table G.LX: The Relationship between Home Environment
and Attainment Average in High Ability Students

		Dependent Variable = AA			
N = 503		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	rB x 100
PPM5	Mother demand	-.01	.03	.02	0.03 *
FED	Fathers education	.08	.09	.08	0.72
UR	Urban residence	-.06	-.08	-.08	0.48
FMS	Family size	-.04	-.03	-.03	0.12
FPH	Father absent	.12	.12	.12	1.44
FRM	Father deceased	.00	.02	.02	0.00
RPM	Respect for mother	.00	-.03	-.02	0.00 *
PA3	Parent attitude - non-smoking	-.05	-.04	-.04	0.20
PA4	Parent attitude - chores	-.06	-.07	-.06	0.42
PPF1	Father support	.02	.08	.05	0.16
PPF2	Father angry rejection	-.02	.09	.06	0.18 *
PPF3	Father permissive/ non-intrusive	-.07	-.06	-.05	0.42
PPF4	Father anxiety - sensitivity	-.07	-.07	-.05	0.49
PPM1	Mother support	-.01	-.03	-.02	0.03
PPM4	Mother anxiety - sensitivity	-.07	-.08	-.06	0.56
Multiple R = 0.2155				$100R^2 = 4.64$	$SD_y = 40.2$

Table G.LXI: The Relationship between Home Environment
and Attainment Average in Middle Ability Students

		Dependent Variable = AA			
N = 886		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$rB \times 100$
PPM5	Mother demand	.09	.08	.07	0.72
FED	Fathers education	-.01	-.02	-.02	0.02
UR	Urban residence	-.06	-.07	-.07	0.42
NSSA	Non-state primary	.13	.12	.12	1.56
FMS	Family size	.03	.03	.03	0.09
PA5	Parent attitude - companionship	.00	-.01	-.01	0.00
PA1	Parent attitude - mobility	-.05	-.04	-.04	0.20
PA3	Parent attitude - non-smoking	-.03	-.05	-.05	0.15
PA4	Parent attitude - chores	-.01	-.04	-.04	0.04
PPF1	Father support	.02	-.03	-.02	0.06*
PPF2	Father angry rejection	-.05	-.05	-.03	0.25
PPF4	Father permissive/ non-intrusive	-.02	-.04	-.03	0.08
PPM1	Mother support	.03	.03	.02	0.09
PPM4	Mother permissive/ non-intrusive	.09	.08	.06	0.72
Multiple R = 0.1945				$100R^2 = 3.78$	$SD_y = 16.4$

Table G.LXII: The Relationship between Home Environment
and Attainment Average in Lower Ability Students

		Dependent Variable = AA			
N = 538		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contributions
		r	Beta	$r_{12.3}$	$r_B \times 100$
PFM5	Mother demand	.10	.10	.09	1.00
FED	Fathers education	-.14	-.17	-.16	2.38
NSSA	Non-state primary	.06	.07	.07	0.42
FPH	Father absent	.04	.05	.05	0.20
FPA	Father deceased	-.04	-.04	-.04	0.16
PA5	Parent attitude - companionship	.06	.03	.03	0.18
PA1	Parent attitude - mobility	-.08	-.08	-.09	0.64
PA3	Parent attitude - non-smoking	-.07	-.09	-.09	0.63
PA4	Parent attitude - chores	-.07	-.05	-.05	0.35
PPF1	Father support	-.02	.09	.06	0.18 *
PPF2	Father angry rejection	.05	.09	.07	0.45
PFM1	Mother support	-.05	-.06	-.05	0.30
PFM4	Mother anxiety - sensitivity	.03	-.04	-.04	0.12 *
Multiple R = 0.2510				$100R^2 = 6.3$	$SD_y = 43.92$

Table G.LXIII: The Relationship between Home Environment
and Attainment Average in Upper SES Students

		Dependent Variable = AA			
N = 737		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contributions
		r	Beta	$r_{12.3}$	rB x 100
PPM5	Mother demand	.07	.08	.07	0.56
FED	Fathers education	-.10	-.08	-.08	0.80
UR	Urban residence	-.11	-.08	-.08	0.88
NSSA	Non-state primary	.08	.08	.08	0.64
FMS	Family size	.14	.09	.09	1.26
FPH	Father absent	.09	.08	.08	0.72
FPA	Father deceased	.13	.11	.11	1.43
RPM	Respect for mother	.02	.08	.07	0.16
PA5	Parent attitude - companionship	.04	.03	.03	0.12
PA1	Parent attitude - mobility	-.00	-.02	-.02	0.00
PA3	Parent attitude - non-smoking	-.06	-.07	-.07	0.42
PA4	Parent attitude - chores	-.09	-.05	-.05	0.45
PPF3	Father permissive/ non-intrusive	-.12	-.09	-.08	1.08
PPM1	Mother support	-.08	-.08	-.06	0.64
PPM4	Mother anxiety - sensitivity	.07	.04	.04	0.28
Multiple R = 0.3031				$100R^2 = 9.19$	$SD_y = 68.56$

Table G.LXIV: The Relationship between Home Environment
and Attainment Average in Lower SES Students

		Dependent Variable = AA			
N = 1190		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contributions
		r	Beta	$r_{12.3}$	rB x 100
PPM5	Mother demand	.09	.09	.09	0.81
FED	Fathers education	-.07	-.08	-.08	0.56
UR	Urban residence	-.03	-.04	-.03	0.12
NSSA	Non-state primary	.13	.13	.13	1.69
FMS	Family size	.04	.02	.02	0.08
FPH	Father absent	.02	.02	.02	0.04
FPA	Father deceased	.05	.05	.05	0.25
FRM	Respect from mother	.04	.03	.02	0.12
PA5	Parent attitude - companionship	.04	.01	.01	0.04
PA3	Parent attitude - non-smoking	-.05	-.05	-.05	0.25
PA4	Parent attitude - chores	-.08	-.08	-.07	0.64
PPF1	Father support	.02	.04	.03	0.08
PPF2	Father angry rejection	-.03	-.06	-.04	0.18
PPF3	Father permissive/ non-intrusive	.04	.02	.02	0.08
PPF4	Father anxiety - sensitivity	.03	.10	.07	0.30
PPM1	Mother support	.01	-.05	-.03	0.05*
PPM4	Mother anxiety - sensitivity	-.03	-.08	-.06	0.24
Multiple R = 0.2300		$100R^2 = 5.3$ $SD_y = 79.32$			

Table G.LXV: Relationships between Home Environment and
Conformity Problems in Males

		Dependent Variable = C			
N = 968		Simple Corr. Coeff. r	Normalized Regr. Coeff. Beta	Partial Corr. Coeff. $r_{12.3}$	Coefficient of Contribution $r_B \times 100$
PFM5	Mother demand	.08	.11	.11	0.88
FED	Fathers education	-.06	-.02	-.02	0.12
UR	Urban residence	.16	.08	.09	0.32
NSSA	Non-state primary	-.13	-.09	-.10	1.17
FMS	Family size	.09	.06	.06	0.54
FPH	Father absent	.08	.06	.06	0.48
FPA	Father deceased	.12	.10	.11	1.20
FRM	Respect from mother	-.16	-.02	-.01	0.32
RPM	Respect for mother	-.18	-.02	-.02	0.36
PA5	Parent attitude - companionship	-.00	-.04	-.04	0.00
PA1	Parent attitude - mobility	-.02	-.02	-.02	0.04
PA3	Parent attitude - non-smoking	-.05	-.06	-.07	0.30
PA4	Parent attitude - chores	-.00	-.04	-.04	0.00
PPF1	Father support	-.25	-.05	-.04	1.25
PPF2	Father angry rejection	.32	.13	.09	4.16
PPF4	Father anxiety - sensitivity	.27	.04	.03	1.08
PFM1	Mother support	-.28	-.15	-.11	4.20
PFM4	Mother anxiety - sensitivity	.32	.15	.13	4.80
Multiple R = 0.4770				$100R^2 = 22.75$	
				$SD_y = 3.68$	

Table G.LXVI: Relationships between Home Environment and Conformity Problems in Females

		Dependent Variable = C			
N = 811		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$rB \times 100$
PPM5	Mother demand	.09	.09	.10	0.81
FED	Fathers education	-.09	-.04	-.05	0.36
UR	Urban residence	.12	.04	.05	0.48
FMS	Family size	.17	.09	.11	1.53
FPH	Father absent	.08	.06	.08	0.48
FPA	Father deceased	.04	.01	.01	0.04
FRM	Respect from mother	-.24	.03	.03	0.72
RPM	Respect for mother	-.28	-.03	-.03	0.84
PA1	Parent attitude - mobility	-.06	-.06	-.08	0.36
PA3	Parent attitude - non-smoking	-.04	-.05	-.06	0.20
PA4	Parent attitude - chores	-.29	-.08	-.09	2.32
PPF1	Father support	-.40	-.04	-.04	1.60
PPF2	Father angry rejection	.40	.18	.18	7.20
PPF3	Father permissive/ non-intrusive	-.04	.06	.06	0.24*
PPM1	Mother support	-.48	-.30	-.23	14.40
PPM4	Mother anxiety - sensitivity	.42	.15	.15	6.30
Multiple R = 0.6045				$100R^2 = 36.5$	
				$SD_y = 3.72$	

Table G.LXVII: Relationships between Home Environment and Family Relations Problems in Females

		Dependent Variable = FR			
N = 811		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$rB \times 100$
PPM5	Mother demand	.09	.08	.11	0.72
FED	Fathers education	-.11	-.05	-.07	0.55
UR	Urban residence	.09	-.01	-.02	0.09*
FMS	Family size	.14	.03	.04	0.42
FPH	Father absent	.13	.11	.15	1.43
FPA	Father deceased	.07	.04	.06	0.28
RPM	Respect for mother	-.36	-.04	-.05	1.44
PA5	Parent attitude - companionship	.04	-.01	-.02	0.04*
PA3	Parent attitude - non-smoking	-.01	-.01	-.02	0.01
PA4	Parent attitude - chores	-.29	-.03	-.04	0.87
PPF1	Father support	-.50	-.10	-.10	5.00
PPF2	Father angry rejection	.50	.22	.24	11.00
PPF3	Father permissive/ non-intrusive	-.06	.08	.11	0.48*
PPM1	Mother support	-.62	-.39	-.35	24.18
PPM4	Mother anxiety - sensitivity	.54	.21	.24	11.34
Multiple R = 0.7424				$100R^2 = 55.12$	$SD_y = 3.95$

Table G.LXVIII: Relationships between Home Environment and Family Relations Problems in Males

		Dependent Variable = FR			
N = 968		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	rB x 100
PPM5	Mother demand	.05	.11	.11	0.55
FED	Fathers education	-.12	-.01	-.01	0.12
UR	Urban residence	.13	.02	.03	0.26
NSSA	Non-state primary	-.13	-.07	-.09	0.91
FMS	Family size	.08	.02	.02	0.16
FPH	Father absent	.06	.02	.02	0.12
FPA	Father deceased	.05	.04	.05	0.20
FRM	Respect from mother	-.21	.03	.03	0.63 *
RPM	Respect for mother	-.27	-.07	-.06	1.89
PA5	Parent attitude - companionship	.08	.04	.05	0.32
PA1	Parent attitude - mobility	-.03	-.04	-.05	0.12
PA3	Parent attitude - non-smoking	-.04	-.04	-.04	0.16
PA4	Parent attitude - chores	-.22	-.03	-.03	0.66
PPF1	Father support	-.42	-.20	-.17	8.40
PPF2	Father angry reject- ion	.41	.16	.13	6.56
PPF4	Father anxiety - sensitivity	.34	.06	.05	2.04
PPM1	Mother support	-.43	-.21	-.16	9.03
PPM4	Mother anxiety - sensitivity	.36	.15	.14	5.40
Multiple R = 0.6008				$100R^2 = 36.1$	
				$SD_y = 4.3$	

Table G.LXIX: Relationships between Home Environment and Problems of Adjustment to Reality in Females

		Dependent Variable = R			
N = 811		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	rB x 100
PPM5	Mother demand	.13	.07	.07	0.91
FED	Fathers education	-.13	-.08	-.09	1.04
UR	Urban residence	.02	-.05	-.05	0.10*
NSSA	Non-state primary	-.08	-.02	-.02	0.16
FMS	Family size	.09	.03	.04	0.27
FPH	Father absent	.15	.13	.15	1.95
FPA	Father deceased	.01	-.02	-.02	0.02
FRM	Respect from mother	-.12	.03	.03	0.36*
RPM	Respect for mother	-.11	.08	.06	0.88*
PA5	Parent attitude - companionship	.11	.05	.06	0.55
PA1	Parent attitude - mobility	.03	.02	.03	0.06
PA3	Parent attitude - non-smoking	-.06	-.06	-.07	0.36
PA4	Parent attitude - chores	-.23	-.09	-.09	2.07
PPF1	Father support	-.31	-.07	-.05	2.17
PPF2	Father angry rejection	.33	.15	.11	4.95
PPF3	Father permissive/ non-intrusive	-.29	.06	.06	1.74*
PPF4	Father anxiety - sensitivity	.27	.02	.02	0.54
PFM1	Mother support	-.33	-.20	-.14	6.60
PPM4	Mother anxiety - sensitivity	.38	.17	.15	6.46
Multiple R = 0.5137				$100R^2 = 26.4$	
				$SD_y = 7.50$	

Table G.LXX: Relationships between Home Environment and Problems of Adjustment to Reality in Males

		Dependent Variable = R			
N = 968		Simple Corr. Coeff. r	Normalized Regr. Coeff. Beta	Partial Corr. Coeff. $r_{12.3}$	Coefficient of Contribution $rB \times 100$
PFM5	Mother demand	.08	.09	.09	0.72
FED	Fathers education	-.09	-.05	-.05	0.45
UR	Urban residence	.08	.02	.02	0.16
NSSA	Non-state primary	-.06	-.03	-.03	0.18
FMS	Family size	.06	.02	.02	0.12
FPH	Father absent	.06	.04	.04	0.24
FPA	Father deceased	.07	.06	.07	0.42
PA5	Parent attitude - companionship	.05	.01	.01	0.05
PA1	Parent attitude - mobility	-.01	-.02	-.02	0.02
PA3	Parent attitude - non-smoking	-.08	-.09	-.09	0.72
PA4	Parent attitude - chores	-.15	-.03	-.03	0.45
PPF1	Father support	-.22	-.08	-.06	1.76
PPF2	Father angry rejection	.26	-.08	.06	2.08 *
PPF3	Father permissive/ non-intrusive	-.10	.02	-.02	0.20 *
PPF4	Father anxiety - sensitivity	.25	-.08	.06	2.00 *
PPM1	Mother support	-.22	-.10	-.08	2.20
PPM4	Mother anxiety - sensitivity	.26	-.12	.10	3.12 *
Multiple R = 0.3850				$100R^2 = 14.8$	
				$SD_y = 8.2$	

Table G.LXXI: Relationships between Home Environment and Problems of Social Relations in Males

		Dependent Variable = SR			
N = 968		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	rB x 100
PPM5	Mother demand	-.02	.03	.02	0.06 *
FED	Fathers education	-.09	-.03	-.03	0.27
UR	Urban residence	-.01	-.04	-.04	0.04
NSSA	Non-state primary	-.03	-.01	-.01	0.03
FMS	Family size	.14	.11	.12	1.54
FPH	Father absent	-.02	-.05	-.06	0.10
FPA	Father deceased	-.02	-.08	-.03	0.06
FRM	Respect from mother	-.09	.02	.01	0.18 *
RPM	Respect for mother	-.11	-.04	-.03	0.44
PA5	Parent attitude - companionship	.06	.04	.04	0.24
PA1	Parent attitude - mobility	.02	.02	.02	0.04
PA4	Parent attitude - chores	-.11	-.03	-.02	0.33
PPF1	Father support	-.23	-.13	-.09	2.99
PPF2	Father angry rejection	.08	-.13	-.09	1.04 *
PPF3	Father permissive/ non-intrusive	-.17	-.11	-.10	1.87
PPF4	Father anxiety - sensitivity	.11	.12	.08	1.32
PFM1	Mother support	-.21	-.09	-.06	1.89
PFM4	Mother anxiety - sensitivity	-.18	.05	.04	0.90 *
Multiple R = 0.3165		$100R^2 = 10.02$ $SD_y = 9.31$			

Table G.LXXII: Relationships between Home Environment and Problems of Social Relations in Females

		Dependent Variable = SR			
N = 811		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. r _{12.3}	Coefficient of rB x 100
PPM5	Mother demand	-.03	-.03	-.03	0.09
FED	Fathers education	-.13	-.08	-.08	1.04
UR	Urban residence	-.09	-.12	-.12	1.08
FPH	Father absent	.02	.01	.01	0.02
FRM	Respect from mother	-.13	-.06	-.04	0.78
RPM	Respect for mother	-.09	.06	.05	0.54*
PA5	Parent attitude - companionship	.09	.07	.09	0.63
PA1	Parent attitude - mobility	.10	.09	.09	0.90
PA4	Parent attitude - chores	-.11	-.02	-.02	0.22
PPF1	Father support	-.22	-.10	-.08	2.20
PPM1	Mother support	-.23	-.16	-.10	3.68
PPM4	Mother anxiety - sensitivity	.15	.05	.05	0.75
Multiple R = 0.3270				100R ² = 10.7	
				SD _y = 9.9	

Table G.LXXIII: Relationships between Home Environment and the Resourceful Trait in Females

		Dependent Variable = Q2			
N = 811		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$r_B \times 100$
PPM5	Mother demand	-.02	.06	.06	0.12*
FED	Fathers education	-.09	-.07	-.08	0.63
UR	Urban residence	-.04	-.04	-.04	0.16
FMS	Family size	.01	-.01	-.01	0.01*
FPH	Father absent	-.07	-.08	-.08	0.56
FRM	Respect from mother	-.15	-.10	-.09	1.50
PA5	Parent attitude - companionship	.07	.07	.07	0.49
PA1	Parent attitude - mobility	.03	.01	.01	0.03
PA3	Parent attitude - non-smoking	-.06	-.05	-.05	0.30
PA4	Parent attitude - chores	-.09	-.03	-.03	0.27
PPF2	Father angry rejection	.05	-.06	-.04	0.30*
PPF3	Father permissive/ non-intrusive	-.11	-.11	-.11	1.21
PPF4	Father anxiety - sensitivity	.03	.03	.02	0.09
PFM1	Mother support	-.15	-.09	-.07	1.35
Multiple R = 0.2555				$100R^2 = 6.53$	$SD_y = 3.16$

Table G.LXXIV: Relationships between Home Environment and the Resourceful Trait in Males

		Dependent Variable = Q2			
N = 968		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$r_B \times 100$
PPM5	Mother demand	-.05	-.05	-.05	0.25
FED	Fathers education	-.10	-.09	-.09	0.90
UR	Urban residence	-.04	-.02	-.02	0.08
NSSA	Non-state primary	-.02	-.01	-.01	0.02
FMS	Family size	.06	.06	.06	0.36
FPH	Father absent	.02	.02	.02	0.04
FPA	Father deceased	-.05	-.04	-.04	0.20
FRM	Respect from mother	-.05	-.07	-.06	0.35
RPM	Respect for mother	-.01	.02	.02	0.02*
PA5	Parent attitude - companionship	.04	.03	.03	0.12
PA1	Parent attitude - mobility	.02	.01	.01	0.02
PA3	Parent attitude - non-smoking	.04	.04	.03	0.16
PA4	Parent attitude - chores	.01	.02	.02	0.02
PPF1	Father support	-.03	.03	.02	0.09*
PPF2	Father angry rejection	-.03	-.10	-.07	0.30
PPF3	Father permissive/ non-intrusive	-.08	-.08	-.07	0.64
PPF4	Father anxiety - sensitivity	-.01	.07	.05	0.07*
Multiple R = 0.1818				$100R^2 = 3.31$	$SD_y = 3.11$

Table G.LXXV: Relationships between Home Environment and the Sensitive Trait in Males

		Dependent Variable = I			
N = 968		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	rB x 100
PPM5	Mother demand	.02	-.02	-.02	0.04*
FED	Fathers education	.12	.10	.10	1.20
UR	Urban residence	-.02	-.03	-.03	0.06
NSSA	Non-state primary	.04	.01	.01	0.04
FPH	Father absent	.05	.06	.06	0.30
FPA	Father deceased	.05	.06	.07	0.30
FRM	Respect from mother	.08	.04	.04	0.32
RPM	Respect for mother	.08	.02	.02	0.16
PA1	Parent attitude - mobility	.01	.02	.02	0.02
PA3	Parent attitude - non-smoking	-.07	-.07	-.07	0.49
PPF2	Father angry rejection	-.04	-.10	-.07	0.40
PPF4	Father anxiety - sensitivity	.05	.15	.10	0.75
PPM1	Mother support	.09	.04	.03	0.36
PPM4	Mother anxiety - sensitivity	-.02	-.02	-.01	0.04
Multiple R = 0.2114				$100R^2 = 4.7$	
				$SD_y = 3.5$	

Table G.LXXVI: Relationships between Home Environment and the Sensitive Trait in Females

		Dependent Variable = I			
N = 811		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	rB x 100
PPM5	Mother demand	.03	-.04	-.04	0.12*
FED	Fathers education	.14	.12	.12	1.68
UR	Urban residence	.05	.06	.06	0.30
NSSA	Non-state primary	.01	-.03	-.03	0.03*
FPA	Father deceased	-.05	-.03	-.03	0.15
FRM	Respect from mother	-.00	-.12	-.09	0.00
RFM	Respect for mother	.03	.02	.02	0.06
PA5	Parent attitude - companionship	.06	.06	.06	0.36
PA1	Parent attitude - mobility	-.04	-.06	-.06	0.24
PA4	Parent attitude - chores	.19	.17	.15	3.23
PPF1	Father support	.12	.02	.02	0.24
PPF2	Father angry rejection	-.03	-.11	-.07	0.33
PPF3	Father permissive/ non-intrusive	.02	-.03	-.03	0.06
PPF4	Father anxiety - sensitivity	.06	.11	.07	0.66
PPM1	Mother support	.15	.15	.10	2.25
PFM4	Mother anxiety - sensitivity	.04	.12	.09	0.48
Multiple R = 0.3107				$100R^2 = 9.65$	$SD_y = 3.68$

Table G.LXXVII: Relationships between Home Environment and the Sociable Trait in Females

		Dependent Variable = A			
N = 811		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$r_B \times 100$
PPM5	Mother demand	-.03	-.05	-.05	0.15
FED	Fathers education	.12	.09	.09	1.08
UR	Urban residence	.11	.11	.11	1.21
NSSA	Non-state primary	.07	.04	.04	0.28
FMS	Family size	-.09	-.07	-.07	0.63
FPH	Father absent	-.02	-.02	-.02	0.04
FPA	Father deceased	-.09	-.07	-.07	0.63
RPM	Respect for mother	.09	.02	.02	0.18
PA5	Parent attitude - companionship	-.05	-.03	-.03	0.15
PA1	Parent attitude - mobility	-.06	-.05	-.05	0.30
PA3	Parent attitude - non-smoking	.05	.04	.04	0.20
PA4	Parent attitude - chores	.11	.05	.05	0.55
PPF1	Father support	.11	-.03	-.02	0.33
PPF3	Father permissive/ non-intrusive	.09	.08	.07	0.72
PPF4	Father anxiety - sensitivity	-.02	.03	.03	0.06 *
PPM1	Mother support	.16	.11	.07	1.76
PPM4	Mother anxiety - sensitivity	-.12	-.06	-.05	0.72
Multiple R = 0.2852				$100R^2 = 8.13$	$SD_y = 3.33$

Table G.LXXVIII: Relationships between Home Environment and the Sociable Trait in Males

		Dependent Variable = A			
N = 968		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	r _{12.3}	rB x 100
PPM5	Mother demand	.03	-.01	-.01	0.03 *
FED	Fathers education	.12	.07	.07	0.12
UR	Urban residence	.06	.06	.06	0.36
NSSA	Non-state primary	.05	.02	.02	0.10
FMS	Family size	-.06	.04	-.04	0.24 *
FPA	Father deceased	.04	.04	.04	0.16
FRM	Respect from mother	.07	.02	.01	0.14
PA5	Parent attitude - companionship	-.04	-.02	-.02	0.08
PA1	Parent attitude - mobility	-.08	-.08	-.08	0.64
PA3	Parent attitude - non-smoking	-.02	-.03	-.03	0.06
PA4	Parent attitude - chores	.09	.06	.05	0.54
PPF2	Father angry rejection	-.05	.03	.02	0.15 *
PPF3	Father permissive/ non-intrusive	.12	.07	.06	0.84
PPF4	Father anxiety - sensitivity	-.04	-.05	-.04	0.20
PPM1	Mother support	.14	.10	.08	1.40
PPM4	Mother anxiety - sensitivity	-.01	.04	.04	0.04 *
Multiple R = 0.2282				100R ² = 5.21	
				SD _y = 0.11	

Table G.LXXIX: Relationships between Home Environment and the Tense Trait in Females

		Dependent Variable = Q4			
N = 811		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$rB \times 100$
UR	Urban residence	.01	-.02	-.02	0.02 *
NSSA	Non-state primary	.02	.03	.03	0.06
FMS	Family size	.09	.06	.06	0.54
FPH	Father absent	.04	.04	.04	0.16
FPA	Father deceased	.04	.03	.03	0.12
PA1	Parent attitude - companionship	.04	.05	.05	0.20
PA3	Parent attitude - non-smoking	.04	.03	.03	0.12
PPF1	Father support	-.11	-.07	-.05	0.77
PPF3	Father permissive/ non-intrusive	.00	.05	.05	0.00
PPF4	Father anxiety - sensitivity	.11	.06	.05	0.66
PPM1	Mother support	-.01	-.02	-.02	0.02
PPM4	Mother anxiety - sensitivity	.12	.05	.04	0.60
Multiple R = 0.1800				$100R^2 = 3.24$	$SD_y = 3.38$

Table G.LXXX: Relationships between Home Environment and the Tense Trait in Males

		Dependent Variable = Q4			
N = 968		Simple Corr. Coeff. r	Normalized Regr. Coeff. Beta	Partial Corr. Coeff. r _{12.3}	Coefficient of Contribution rB x 100
PFM5	Mother demand	.08	.01	.01	0.08
UR	Urban residence	.01	-.03	-.03	0.03*
NSSA	Non-state primary	.10	.11	.11	1.10
FMS	Family size	-.02	-.04	-.04	0.08
FPH	Father absent	-.02	-.03	-.03	0.06
RPM	Respect for mother	.03	.04	.04	0.12
PA5	Parent attitude - companionship	.06	.04	.04	0.24
PA1	Parent attitude - mobility	.02	.02	.02	0.04
PA3	Parent attitude - non-smoking	-.06	-.04	-.04	0.24
PA4	Parent attitude - chores	-.06	-.05	-.05	0.30
PPF1	Father support	-.05	-.12	-.09	0.60
PPF2	Father angry rejection	.07	-.08	-.05	0.56
PPF4	Father anxiety - sensitivity	.13	.10	.07	1.30
PFM1	Mother support	.01	.08	.06	0.08
PPM4	Mother anxiety - sensitivity	.13	.14	.11	1.82
Multiple R = 0.2360				100R ² = 5.57	
				SD _y = 3.35	

Table G.LXXXI: Relationships between Home Environment and Perceived Favourability to Teachers, in Females

		Dependent Variable = IF			
N = 811		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$r_B \times 100$
PPM5	Mother demand	-.03	-.09	-.08	0.27
UR	Urban residence	.04	.09	.09	0.36
NSSA	Non-state primary	-.04	-.05	-.05	0.20
FMS	Family size	-.10	-.06	-.06	0.60
FPH	Father absent	-.06	-.06	-.06	0.36
FPA	Father deceased	.00	.01	.01	0.00
FRM	Respect from mother	.20	.08	.06	1.60
RPM	Respect for mother	.20	.06	.05	1.20
PA5	Parent attitude - companionship	-.03	-.02	-.02	0.06
PA3	Parent attitude - non-smoking	.04	.03	.03	0.12
PA4	Parent attitude - chores	.19	.09	.09	1.71
PPF1	Father support	.24	.16	.11	3.84
PF2	Father angry re- jection	-.07	.06	.05	0.42*
PPF3	Father permissive/ non-intrusive	.02	-.05	-.05	0.10*
PPM1	Mother support	.26	.10	.07	2.60
PPM4	Mother anxiety - sensitivity	-.11	.02	.01	0.22*
Multiple R = 0.3462				$100R^2 = 11.98$	$SD_y = 8.38$

Table G.LXXXII: Relationships between Home Environment and Perceived Favourability to Teachers, in Males

		Dependent Variable = IF			
N = 968		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$r_B \times 100$
PPM5	Mother demand	.04	-.02	-.02	0.08*
UR	Urban residence	-.07	-.02	-.02	0.14
NSSA	Non-state primary	.01	-.03	-.03	0.03*
FMS	Family size	-.05	-.03	-.03	0.15
FPH	Father absent	-.08	-.07	-.07	0.56
FPA	Father deceased	-.03	-.03	-.04	0.09
FRM	Respect from mother	.23	.17	.14	3.91
RPM	Respect for mother	.17	-.02	-.02	0.34*
PA5	Parent attitude - companionship	.03	.04	.05	0.12
PA1	Parent attitude - mobility	-.03	-.05	-.05	0.15
PA3	Parent attitude - non-smoking	.15	.13	.13	1.95
PA4	Parent attitude - chores	.17	.07	.07	1.19
PPF1	Father support	.20	.02	.01	0.40
PPF3	Father permissive/ non-intrusive	.10	.02	.02	0.20
PPF4	Father anxiety - sensitivity	-.09	-.04	-.03	0.36
PPM1	Mother support	.24	.11	.08	2.64
PPM4	Mother anxiety - sensitivity	-.11	-.05	-.04	0.55
Multiple R = 0.3430				$100R^2 = 11.76$	
				$SD_y = 8.06$	

Table G.LXXXIII: Relationships between Home Environment and Positive Perception of Teachers Attitudes to Self, in Males

		Dependent Variable = PTA			
N = 968		Simple Corr. Coeff. r	Normalized Regr. Coeff. Beta	Partial Corr. Coeff. r _{12.3}	Coefficient of Contribution rB x 100
PFM5	Mother demand	-.03	-.06	-.05	0.18
FED	Fathers education	-.08	-.08	-.08	0.64
UR	Urban residence	-.10	-.06	-.06	0.60
NSSA	Non-state primary	-.02	-.03	-.03	0.06
FPH	Father absent	-.10	-.09	-.10	0.90
FRM	Respect from mother	.17	.11	.09	1.87
RPM	Respect for mother	.15	.04	.03	0.60
PA5	Parent attitude - companionship	.03	.03	.03	0.09
PA1	Parent attitude - mobility	.06	.05	.05	0.30
PA3	Parent attitude - non-smoking	.08	.06	.06	0.48
PA4	Parent attitude - chores	.09	.02	.02	0.18
PPF2	Father angry rejection	-.11	-.08	-.07	0.88
PPM1	Mother support	.13	.05	.03	0.65
PPM4	Mother anxiety - sensitivity	-.09	-.02	-.02	0.18
Multiple R = 0.2740				100R ² = 7.51	
				SD _y = 0.65	

Table G.LXXXIV: Relationships between Home Environment and Positive Perception of Teachers Attitudes to Self, in Females

		Dependent Variable = PTA			
N = 811		Simple Corr. Coeff. r	Normalized Regr. Coeff. Beta	Partial Corr. Coeff. $r_{12.3}$	Coefficient of Contribution $r_B \times 100$
PPM5	Mother demand	-.13	-.15	-.14	1.95
FED	Fathers education	-.03	-.08	-.08	0.24
UR	Urban residence	.06	.10	.10	0.60
NSSA	Non-state primary	.02	.01	.01	0.02
FMS	Family size	-.04	-.04	-.04	0.16
FPH	Father absent	-.01	.01	.01	0.01
FPA	Father deceased	.02	.03	.04	0.06
FRM	Respect from mother	.11	.08	.06	0.88
RPM	Respect for mother	.09	-.04	-.03	0.36
PA5	Parent attitude - companionship	-.09	-.07	-.07	0.63
PA1	Parent attitude - mobility	.04	.05	.05	0.20
PA3	Parent attitude - non-smoking	.05	.05	.05	0.25
PA4	Parent attitude - chores	.13	.06	.05	0.78
PPF1	Father support	.14	.15	.11	2.10
PPF2	Father angry rejection	-.05	.09	.06	0.45
PPF3	Father permissive/ non-intrusive	-.04	-.07	-.07	0.28
PPF4	Father anxiety - sensitivity	-.07	-.04	-.03	0.28
PFM1	Mother support	.15	.08	.06	1.20
Multiple R = 0.2983				$100R^2 = 8.9$ $SD_y = 0.67$	

Table G.LXXXV: Relationships between Home Environment and the Attitude of General Commitment to the School, in Males

		Dependent Variable = AGC			
N = 968		Simple Corr. Coeff. r	Normalized Regr. Coeff. Beta	Partial Corr. Coeff. $r_{12.3}$	Coefficient of Contribution $rB \times 100$
PFM5	Mother demand	.04	.01	.01	0.04
FED	Fathers education	-.03	-.05	-.05	0.15
UR	Urban residence	-.02	.01	.01	0.02*
NSSA	Non-state primary	-.03	-.04	-.04	0.12
FMS	Family size	-.03	-.01	-.01	0.30
FPH	Father absent	-.02	-.02	-.02	0.04
FPA	Father deceased	-.05	-.05	-.05	0.25
FRM	Respect from mother	.04	-.02	-.02	0.08*
RPM	Respect for mother	.07	.02	.02	0.14
PA5	Parent attitude - companionship	-.02	-.04	-.04	0.08
PA1	Parent attitude - mobility	.06	.05	.05	0.30
PA3	Parent attitude - non-smoking	.08	.07	.07	0.56
PPF1	Father support	.08	.02	.02	0.16
PPF2	Father angry rejection	-.03	-.03	-.02	0.09
PPF3	Father permissive/ non-intrusive	.00	-.02	-.02	0.00
PPF4	Father anxiety - sensitivity	-.02	.02	.01	0.04*
PPM1	Mother support	.10	.09	.06	0.90
Multiple R = 0.1686				$100R^2 = 2.84$	$SD_y = 0.96$

Table G.LXXXVI: Relationships between Home Environment and the Attitude of General Commitment to the School, in Females

		Dependent Variable = AGC			
N = 811		Simple Corr. Coeff. r	Normalized Regr. Coeff. Beta	Partial Corr. Coeff. r _{12.3}	Coefficient of Contribution rB x 100
PPM5	Mother demand	-.01	-.04	-.04	0.04
FED	Fathers education	.04	.02	.02	0.08
UR	Urban residence	.01	.03	.03	0.03
NSSA	Non-state primary	.05	.05	.05	0.25
FMS	Family size	-.08	-.07	-.07	0.56
FPH	Father absent	-.00	-.03	-.03	0.00
FRM	Respect from Mother	.06	.05	.04	0.30
RPM	Respect for mother	.00	-.09	-.07	0.00
PA5	Parent attitude - companionship	.01	.01	.01	0.01
PA3	Parent attitude - non-smoking	-.00	.02	.02	0.00
PA4	Parent attitude - chores	.11	.07	.06	0.77
PPF1	Father support	.10	.03	.02	0.30
PPF3	Father permissive/ non-intrusive	.02	.03	.03	0.06
PIF4	Father anxiety - sensitivity	-.01	.03	.03	0.03*
PFM1	Mother support	.11	.07	.05	0.77
Multiple R = 0.1849				100R ² = 3.42	
				SD _y = 0.89	

Table G.LXXXVII: Relationships between Home Environment and Social Interest, in Males

		Dependent Variable = SOI			
N = 968		Simple Corr. Coeff. r	Normalized Regr. Coeff. Beta	Partial Corr. Coeff. r _{12.3}	Coefficient of Contribution rB x 100
PFM5	Mother demand	.12	.08	.08	0.96
FED	Fathers education	.07	.05	.05	0.35
UR	Urban residence	-.02	-.03	-.03	0.06
NSSA	Non-state primary	.10	.07	.07	0.70
FPH	Father absent	-.05	-.03	-.03	0.15
FPA	Father deceased	.05	.04	.04	0.20
FRM	Respect from mother	.12	.07	.06	0.84
RPM	Respect for mother	.12	.08	.06	0.96
PA1	Parent attitude - mobility	-.09	-.08	-.08	0.72
PA4	Parent attitude - chores	.04	.01	.01	0.04
PPF1	Father support	.09	-.02	-.01	0.18*
PPF2	Father angry rejection	.02	.04	.03	0.08
PPF3	Father permissive/ non-intrusive	.16	.13	.12	2.08
PPF4	Father anxiety - sensitivity	.07	.03	.02	0.21
PPM1	Mother support	.09	-.04	-.03	0.36*
Multiple R = 0.2595				100R ² = 6.73	
				SD _y = 1.31	

Table G.LXXXVIII: Relationships between Home Environment and Social Interest, in Females

		Dependent Variable = SOI			
N = 811		Simple Corr. Coeff. r	Normalized Regr. Coeff. Beta	Partial Corr. Coeff. r _{12.3}	Coefficient of Contribution rB x 100
PPM5	Mother demand	.11	.07	.06	0.77
FED	Fathers education	-.00	.01	.01	0.00
UR	Urban residence	.06	.06	.06	0.36
NSSA	Non-state primary	.04	.03	.03	0.12
FMS	Family size	.02	.04	.04	0.08
FPA	Father deceased	.04	.04	.04	0.16
FRM	Respect from mother	.18	.15	.11	2.70
RPM	Respect for mother	.14	.07	.06	0.98
PA5	Parent attitude - companionship	-.01	-.04	-.04	0.04
PA1	Parent attitude - mobility	-.07	-.06	-.06	0.42
PA3	Parent attitude - non-smoking	-.01	-.02	-.03	0.02
PPF1	Father support	.04	-.10	-.07	0.40*
PPF3	Father permissive/ non-intrusive	.19	.19	.18	3.61
PPF4	Father anxiety - sensitivity	.03	-.04	-.04	0.12*
PPM1	Mother support	.09	.03	.02	0.27
PPM4	Mother anxiety - sensitivity	.05	.10	.08	0.50
Multiple R = 0.3101				100R ² = 9.62	
				SD _y = 1.19	

Table G.LXXXIX: Relationships between Home Environment and Medical Preference, in Females

		Dependent Variable = MCD			
N = 811		Simple Corr. Coeff. r	Normalized Regr. Coeff. Beta	Partial Corr. Coeff. r _{12.3}	Coefficient of Contribution rB x 100
PPM5	Mother demand	.11	.10	.09	1.10
UR	Urban residence	-.07	-.06	-.06	0.42
FMS	Family size	-.02	.01	.01	0.02*
FPH	Father absent	.02	.04	.03	0.08
FPA	Father deceased	-.03	-.02	-.02	0.06
RPM	Respect for mother	.06	.03	.02	0.18
PA5	Parent attitude - companionship	.07	.06	.06	0.42
PA1	Parent attitude - mobility	-.01	-.01	-.01	0.01
PA3	Parent attitude - non-smoking	-.00	-.02	-.02	0.00
PA4	Parent attitude - chores	.09	.06	.05	0.54
PPF1	Father support	.12	.07	.05	0.84
PPF2	Father angry rejection	-.05	.03	.03	0.40*
PPF3	Father permissive/ non-intrusive	.09	.07	.06	0.63
PPM1	Mother support	.08	-.06	-.04	0.48*
PPM4	Mother anxiety - sensitivity	-.07	-.10	-.08	0.70
Multiple R = 0.2060				100R ² = 4.24	
				SD _y = 12.76	

Table G. XC: Relationships between Home Environment and Mechanical Preference, in Males

		Dependent Variable = MCD			
N = 968		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	rB x 100
PIM5	Mother demand	.03	.11	.10	0.33
FED	Fathers education	-.19	-.14	-.13	2.66
UR	Urban residence	-.13	-.12	-.12	1.56
NSSA	Non-state primary	-.08	-.04	-.04	0.32
FMS	Family size	.09	.07	.07	0.63
FPA	Father deceased	-.05	-.07	-.07	0.35
RPM	Respect for mother	-.10	-.05	-.05	0.50
PA5	Parent attitude - companionship	-.04	-.07	-.08	0.28
PA1	Parent attitude - mobility	.09	.07	.08	0.65
PA3	Parent attitude - non-smoking	.06	.05	.05	0.30
PA4	Parent attitude - chores	-.11	-.09	-.09	0.99
PPF1	Father support	-.11	.07	.05	0.77 *
PPF2	Father angry rejection	.09	.13	.09	1.17
PPF3	Father permissive/ non-intrusive	-.14	-.10	-.09	1.40
PPF4	Father anxiety - sensitivity	-.01	-.08	-.06	0.08
PFM1	Mother support	-.14	-.13	-.09	1.82
PPM4	Mother anxiety - sensitivity	-.01	-.09	-.07	0.09
Multiple R = 0.3494				$100R^2 = 12.21$	
				$SD_y = 15.13$	

Table G. XCI: Relationships between Home Environment and Clerical Preference, in Females

		Dependent Variable = CL			
N = 811		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$rB \times 100$
PPM5	Mother demand	-.06	-.03	-.03	0.18
FED	Fathers education	-.14	-.13	-.13	1.82
UR	Urban residence	.04	.04	.04	0.16
NSSA	Non-state primary	-.07	-.06	-.06	0.42
FMS	Family size	-.01	-.06	-.06	0.06
FPH	Father absent	-.02	-.03	-.03	0.06
FPA	Father deceased	-.00	-.02	-.02	0.00
FRM	Respect from mother	-.00	.03	.02	0.00
RPM	Respect for mother	.04	.10	.08	0.40
PA5	Parent attitude - companionship	-.07	-.08	-.08	0.56
PA1	Parent attitude - mobility	.11	.12	.12	1.32
PA3	Parent attitude - non-smoking	.02	.04	.04	0.08
PA4	Parent attitude - chores	-.12	-.08	-.07	0.96
PPF1	Father support	-.13	-.08	-.06	1.04
PPF3	Father permissive/ non-intrusive	-.04	.01	.01	0.04*
PPF4	Father anxiety - sensitivity	-.00	-.02	-.01	0.00
PFM1	Mother support	-.12	-.11	-.07	1.32
PFM4	Mother anxiety - sensitivity	.02	-.02	-.02	0.04*
Multiple R = 0.2860				$100R^2 = 8.18$	$SD_y = 12.17$

Table G. XCII: Relationships between Home Environment and Clerical Preference in Males

		Dependent Variable = CL			
N = 968		Simple Corr. Coeff.	Normalized Regr. Coefi.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$r_B \times 100$
PPM5	Mother demand	.02	-.04	-.04	0.08*
UR	Urban residence	.08	.08	.08	0.64
NSSA	Non-state primary	.06	.05	.04	0.30
FMS	Family size	-.06	-.06	-.06	0.36
FPH	Father absent	.03	.05	.05	0.15
FPA	Father deceased	.00	.02	.02	0.00
RPM	Respect for mother	.09	.07	.06	0.63
PA5	Parent attitude - companionship	.08	.09	.09	0.72
PA1	Parent attitude - mobility	-.04	-.05	-.05	0.20
PA3	Parent attitude - non-smoking	-.04	-.05	-.05	0.20
PA4	Parent attitude - chores	.06	.06	.05	0.36
PPF1	Father support	.07	.03	.02	0.21
PPF2	Father angry rejection	-.02	-.04	-.03	0.08
PPF4	Father anxiety - sensitivity	.03	.05	.03	0.15
PPM1	Mother support	.09	.05	.03	0.45
PPM4	Mother anxiety - sensitivity	.03	.06	.05	0.18
Multiple R = 0.2105				$100R^2 = 4.43$	$SD_y = 11.41$

Table G. XCIII: Relationships between Home Environment and Science Preference, in Males

		Dependent Variable = SCI			
N = 968		Simple Corr. Coeff. r	Normalized Regr. Coeff. Beta	Partial Corr. Coeff. r _{12.3}	Coefficient of Contribution rB x 100
PPM5	Mother demand	-.02	-.05	-.04	0.10
FED	Fathers education	.11	.10	.10	1.10
UR	Urban residence	.02	.03	.03	0.06
NSSA	Non-state primary	-.02	-.04	-.04	0.08
FMS	Family size	-.15	-.11	-.11	1.65
FPH	Father absent	.01	.03	.03	0.03
FPA	Father deceased	-.06	-.04	-.05	0.24
FRM	Respect from mother	-.03	-.07	-.06	0.21
RPM	Respect for mother	.01	.02	.02	0.02
PA5	Parent attitude - companionship	.09	.11	.11	0.99
PA4	Parent attitude - chores	.10	.09	.09	0.90
PPF2	Father angry rejection	-.12	-.17	-.12	2.04
PPF3	Father permissive/ non-intrusive	.09	.05	.05	0.45
PPF4	Father anxiety - sensitivity	-.04	.10	.07	0.40*
PPM1	Mother support	.07	.02	.02	0.14
Multiple R = 0.2821				100R ² = 7.96	
				SD _y = 15.6	

Table G.XCIV: Relationships between Home Environment and Science Preference in Females

		Dependent Variable: SCI			
N = 811		Simple Corr. Coeff. r	Normalized Regr. Coeff. Beta	Partial Corr. Coeff. r _{12.3}	Coefficient of Contribution rB x 100
PFM5	Mother demand	-.03	.03	.03	0.09
FED	Fathers education	.10	.10	.10	1.00
UR	Urban residence	-.06	-.05	-.05	0.30
NSSA	Non-state primary	-.09	.09	.09	0.81
FMS	Family size	-.09	-.05	-.05	0.45
FPH	Father absent	-.04	-.04	-.04	0.16
FPA	Father deceased	.02	.03	.03	0.06
FRM	Respect from mother	.01	-.03	-.04	0.03
RPM	Respect for mother	.00	-.02	-.03	0.00
PA5	Parent attitude - companionship	.07	.08	.08	0.56
PA4	Parent attitude - chores	.09	.04	.04	0.36
PA1	Parent attitude - mobility	-.07	-.07	-.07	0.49
PA3	Parent attitude - non-smoking	-.07	-.07	-.07	0.49
PPF2	Father angry rejection	-.09	-.04	-.02	0.36
PPF4	Father anxiety - sensitivity	-.03	.04	.06	0.12*
PPF1	Father support	.14	.08	.07	1.12
PFM4	Mother anxiety - sensitivity	-.10	-.09	-.08	0.90
Multiple R = 0.2681				100R ² = 7.19	
				SD _y = 13.6	

APPENDIX H

TABLES OF REGRESSION ANALYSES
WITH PERSONALITY VARIABLES
AS PREDICTORS

Table H. XCV: Relationships between Personality Factors and Aptitude in Males

		Dependent Variable = DAL			
N = 1018		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	rB x 100
R	Adjustment to reality	-.31	-.19	-.15	5.89
FR	Family relations	-.26	-.07	-.07	1.82
MCD	Mechanical preference	-.22	-.10	-.08	2.20
IF	Index of favourability	.13	.06	.07	0.78
CL	Clerical preference	-.02	-.04	-.03	0.08
Q2	Resourceful	.10	.09	.09	0.90
SOI	Social interest	.03	.02	.02	0.06
SR	Social relations	-.10	.07	.07	0.70
B	Bright	.39	.26	.29	10.14
Q4	Tense	-.00	.05	.05	0.00
AGC	Attitude - general commitment	.09	.06	.07	0.54
SCI	Science preference	.32	.16	.16	5.12
PTA	Perception teacher attitude	-.02	-.08	-.08	0.16
CMP	Computation preference	-.01	-.10	-.09	0.10
A	Sociable	.14	.08	.09	1.12
PRC	Practical preference	-.27	-.13	-.09	3.51
Multiple R = 0.5613				$100R^2 = 31.5$	$SD_y = 8.26$

Table H. XCVI: Relationships between Personality Factors and Aptitude in Females

		Dependent Variable = DAL			
N = 884		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$rB \times 100$
C	Calm	-.10	.13	.09	1.30 *
R	Adjustment to Reality	-.24	-.16	-.12	3.12
FR	Family relations	-.18	-.09	-.07	1.62
MCD	Medical preference	-.02	-.09	-.10	0.18
IF	Index of favourability	.14	.06	.06	0.84
CL	Clerical preference	-.18	-.07	-.05	1.26
Q2	Resourceful	-.04	.02	.02	0.08 *
SOI	Social interest	.00	-.01	-.01	0.00
SR	Social relations	-.13	.04	.03	0.52 *
B	Bright	.43	.33	.33	14.19
Q4	Tense	.04	.11	.12	0.44
AGC	Attitude - general commitment	.06	-.03	-.04	0.18 *
SCI	Science preference	.19	.07	.06	1.33
PTA	Perception teacher attitude	.09	.05	.05	0.45
CMP	Computational preference	-.11	-.05	-.04	0.55
A	Sociable	.20	.12	.10	2.40
PRC	Practical preference	-.19	-.08	-.07	1.52
I	Sensitive	.13	.03	.03	0.39
Multiple R = 0.5176				$100R^2 = 26.8$	
				$SD_y = 8.42$	

Table H. XCVII: Relationships between Personality Factors and Aptitude in Lower Ability Students

		Dependent Variable = DAL			
N = 556		Simple Corr. Coeff. r	Normalized Regr. Coeff. Beta	Partial Corr. Coeff. r _{12.3}	Coefficient of Contribution rB x 100
R	Adjustment to Reality	-.19	-.12	-.10	2.28
FR	Family relations	-.12	.02	.02	0.24 *
MCD	Mechanical/Medical Pref.	-.07	-.03	-.04	0.21
CL	Clerical preference	-.04	-.02	-.02	0.08
SOI	Social interest	-.06	-.07	-.08	0.42
SR	Social relations	-.10	.03	.02	0.30 *
B	Bright	.40	.31	.33	12.40
Q4	Tense	.03	.05	.06	0.15
SCI	Science preference	.11	.07	.06	0.77
PTA	Perception teacher attitude	-.00	-.04	-.05	0.00
CMP	Computational preference	-.11	-.07	-.06	0.77
A	Sociable	.23	.17	.16	3.91
PRC	Practical preference	-.22	-.11	-.09	2.42
I	Sensitive	.28	.20	.21	5.60
Multiple R = 0.5355				100R ² = 28.68	
				SD _y = 7.63	

Table H. XCVIII: Relationships between Personality Factors and Aptitude in Middle Ability Students

		Dependent Variable = DAL			
N = 869		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	rB x 100
C	Calm	-.10	.07	.06	0.70*
R	Adjustment to Reality	-.21	-.20	-.15	4.20
FR	Family re.ations	-.14	-.02	-.02	0.28
MCD	Mechanical/Medical pref.	-.16	-.06	-.07	0.96
IF	Index of Favourability	.07	.01	.02	0.07
CL	Clerical preference	.03	.10	.08	0.30
Q2	Resourceful	-.04	.02	.02	0.08*
SOI	Social interest	.08	.06	.07	0.48
SR	Social relations	-.09	.11	.09	0.99*
B	Bright	.43	.34	.35	14.62
Q4	Tense	.06	.07	.08	0.42
SCI	Science preference	.18	.08	.08	1.44
CMP	Computational preference	-.09	-.16	-.13	1.44
A	Sociable	.20	.10	.09	2.00
PRC	Practical preference	-.27	-.11	-.09	2.97
I	Sensitive	.17	.09	.10	1.53
Multiple R = 0.5334				$100R^2 = 28.5$	
				$SD_y = 8.11$	

Table H. XCIX: Relationships between Personality Factors and Aptitude in High Ability Students

		Dependent Variable = DAL			
N = 477		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$r_B \times 100$
C	Calm	-.20	.06	.05	1.20*
R	Adjustment fo Reality	-.33	-.21	-.16	6.93
FR	Family relations	-.35	-.19	-.16	6.65
MCD	Mechanical/Medical Pref.	-.03	-.02	-.03	0.06
IF	Index of Favourability	.10	.04	.04	0.40
Q2	Resourceful	.02	.11	.12	0.22
SOI	Social interest	.09	.04	.04	0.36
B	Bright	.30	.17	.20	5.10
Q4	Tense	.10	.13	.14	1.30
AGC	Attitude - general commit- ment	.12	.06	.07	0.72
SCI	Science preference	.15	.05	.05	0.75
PTA	Perception teacher attitude	-.06	-.09	-.10	0.54
CMP	Computational preference	-.16	-.20	-.22	3.20
A	Sociable	.19	.08	.08	1.52
PRC	Practical preference	-.22	-.15	-.14	3.30
I	Sensitive	.10	.06	.07	0.60
Multiple R = 0.5507				$100R^2 = 30.33$	$SD_y = 8.3$

Table H. C: Relationships between Personality Factors and Aptitude
in Upper SES Students

		Dependent Variable = DAL			
N = 751		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$r_B \times 100$
C	Calm	-.14	.08	.06	1.12 *
R	Adjustment to Reality	-.29	-.24	-.19	6.96
FR	Family Relations	-.21	-.07	-.06	1.47
MCD	Mechanical/Medical pref.	-.08	-.05	-.05	0.40
IF	Index of favourability	.18	.09	.10	1.62
Q2	Resourceful	-.02	.03	.03	0.06 *
SR	Social relations	-.11	.09	.08	0.99 *
B	Bright	.33	.22	.24	7.26
Q4	Tense	.05	.09	.10	0.45
AGC	Attitude - general commitment	.11	.03	.04	0.33
SCI	Science preference	.23	.13	.12	2.99
PTA	Perception teacher attitude	.04	-.05	-.05	0.20
CMP	Computational preference	-.10	-.15	-.15	1.50
A	Sociable	.24	.17	.15	4.08
PRC	Practical preference	-.26	-.13	-.11	3.38
I	Sensitive	.15	.09	.10	1.35
Multiple R = 0.5400				$100R^2 = 29.16$	
				$SD_y = 8.9$	

Table H. CI: Relationships between Personality Factors and Aptitude in Lower SES Students

		Dependent Variable = DAL			
N = 1151		Simple Corr. Coeff. r	Normalized Regr. Coeff. Beta	Partial Corr. Coeff. r _{12.3}	Coefficient of Contribution rB x 100
C	Calm	-.13	.06	.05	0.78 [*]
R	Adjustment to Reality	-.25	-.20	-.16	5.00
MCD	Mechanical/Medical pref.	-.11	-.04	-.04	0.44
IF	Index of favourability	.09	.03	.03	0.27
CL	Clerical preference	-.02	.04	.04	0.08 [*]
Q2	Resourceful	-.01	.04	.04	0.04 [*]
SR	Social relations	-.08	.06	.06	0.48 [*]
B	Bright	.47	.38	.39	17.86
Q4	Tense	.03	.07	.08	0.21
AGC	Attitude - general commitment	.06	.01	.02	0.06
SCI	Science preference	.17	.09	.09	1.53
CMP	Computational preference	-.06	-.09	-.09	0.54
A	Sociable	.19	.09	.09	1.71
PRC	Practical preference	-.22	-.08	-.07	1.76
I	Sensitive	.20	.14	.15	2.80
Multiple R = 0.5544				100R ² = 30.74	
				SD _y = 8.1	

Table H. CII: Relationships between Personality Factors and Attainment Average in Males

		Dependent Variable = AA			
N = 1018		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	r _{12.3}	rB x 100
C	Calm	.13	-.06	-.05	0.78 *
R	Adjustment to Reality	.21	.15	.11	3.15
FR	Family relations	.13	-.02	-.01	0.26 *
MCD	Mechanical preference	.07	.06	.05	0.42
IF	Index of favourability	-.14	-.09	-.08	1.26
CL	Clerical preference	.01	.03	.02	0.03
Q2	Resourceful	-.09	-.04	-.04	0.36
SOI	Social interest	.06	.04	.04	0.24
SR	Social relations	.02	-.06	-.05	0.12
B	Bright	-.21	-.13	-.13	2.73
Q4	Tense	.06	.02	.03	0.12
AGC	Attitude - general commitment	-.05	-.02	-.02	0.10
SCI	Science preference	-.33	-.31	-.26	10.23
PTA	Perception teacher attitude	-.08	-.03	-.03	0.24
CMP	Computational preference	-.10	-.11	-.08	1.10
A	Sociable	-.03	-.03	-.02	0.09
PRC	Practical preference	.11	-.11	-.07	1.21 *
I	Sensitive	.10	.07	.07	0.70
Multiple R = 0.4241				100R ² = 17.99	
				SD _y = 63.7	

Table H. CIII: Relationships between Personality Factors and Attainment Average in Females

		Dependent Variable = AA			
N = 884		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$r_B \times 100$
C	Calm	.12	-.05	-.04	0.60 *
R	Adjustment to Reality	.19	.14	.09	2.66
FR	Family relations	.11	-.03	-.02	0.33 *
MCD	Medical preference	.39	.06	.06	2.34
IF	Index of favourability	-.22	-.17	-.16	3.74
CL	Clerical preference	.09	.11	.08	0.99
SOI	Social interest	.09	.09	.09	0.81
SR	Social relations	.18	-.12	-.09	2.16 *
B	Bright	-.26	-.21	-.21	5.46
Q ⁴	Tense	-.00	-.04	-.04	0.00
SCI	Science preference	-.12	-.08	-.07	0.96
PTA	Perception teacher attitudes	-.18	-.10	-.09	1.80
CMP	Computational preference	-.04	-.12	-.10	0.48
A	Sociable	-.10	-.12	-.10	1.20
PRC	Practical preference	.06	-.06	-.05	0.36 *
Multiple R = 0.4079				$100R^2 = 16.6$ $SD_y = 77.65$	

Table H. CIV: Relationships between Personality Factors and Attainment
Average in Lower SES Students

		Dependent Variable = AA			
N = 1151		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$r_B \times 100$
C	Calm	.10	-.06	-.04	0.60 *
R	Adjustment to Reality	.18	.17	.12	3.06
FR	Family relations	.08	-.08	-.06	0.64 *
MCD	Mechanical/Medical pref.	.07	.05	.05	0.35
IF	Index of favourability	-.17	-.13	-.13	2.21
SOI	Social interest	.09	.09	.09	0.81
SR	Social relations	.00	-.10	-.08	0.00
B	Bright	-.27	-.21	-.21	5.67
Q4	Tense	.02	-.02	-.02	0.04 *
AGC	Attitude - general commit- ment	-.06	-.02	-.02	0.12
SCI	Science preference	-.24	-.23	-.21	5.52
PTA	Perception teacher attit- udes	-.13	-.07	-.07	0.91
CMP	Computational preference	-.08	-.08	-.08	0.64
A	Sociable	-.06	-.07	-.06	0.42
PRC	Practical preference	.10	-.09	-.07	0.90 *
I	Sensitive	-.01	-.02	-.02	0.02
Multiple R = 0.4176				$100R^2 = 17.44$	
				$SD_y = 74.68$	

Table H. CV: Relationships between Personality Factors and Attainment Average in Upper SES Students

		Dependent Variable = AA			
N = 751		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$rB \times 100$
C	Calm	.18	-.03	-.02	0.54 *
R	Adjustment to reality	.25	.17	.12	4.25
FR	Family relations	.20	.06	.05	1.20
MCD	Mechanical/Medical pref.	.02	.03	.03	0.06
IF	Index of favourability	-.20	-.12	-.11	2.40
CL	Clinical preference	.06	.12	.09	0.72
Q2	Resourceful	-.04	-.03	-.03	0.12
SOI	Social interest	.05	.04	.04	0.20
SR	Social relations	.06	-.09	-.07	0.54 *
B	Bright	-.02	-.14	-.14	0.28
Q4	Tense	.03	-.03	-.03	0.09 *
AGC	Attitude - general commitment	-.09	-.02	-.02	0.18
SCI	Science preference	-.19	-.14	-.11	2.66
PTA	Perception teacher attitudes	-.14	-.06	-.06	0.84
CMP	Computational preference	-.03	-.12	-.09	0.36
A	Sociable	-.09	-.12	-.10	1.08
PRC	Practical preference	.08	-.07	-.05	0.56 *
I	Sensitive	-.00	-.02	-.02	0.00
Multiple R = 0.3858				$100R^2 = 14.88$	
				$SD_y = 64.5$	

Table H. CVI: Relationships between Personality Factors and Attainment Average in Lower Ability Students

		Dependent Variable = AA			
N = 556		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	rB x 100
C	Calm	.13	.09	.07	1.17
R	Adjustment to Reality	.11	.09	.06	0.99
FR	Family relations	.05	-.14	-.10	0.70 *
MCD	Mechanical/Medical pref.	-.03	-.02	-.02	0.06
IF	Index of favourability	-.06	.03	.03	0.18
CL	Clerical preference	.09	.13	.09	1.17
Q2	Resourceful	.02	.10	.09	0.20
SOI	Social interest	.14	.10	.10	1.40
SR	Social relations	-.03	-.04	-.03	0.12
B	Bright	-.17	-.13	-.13	2.21
Q4	Tense	-.02	-.05	-.05	0.10
AGC	Attitude - general commitment	-.05	-.03	-.03	0.15
SCI	Science preference	-.17	-.16	-.13	2.72
PTA	Perception teacher attitudes	-.16	-.15	-.14	2.40
CMP	Computational preference	-.02	-.15	-.11	0.30
A	Sociable	-.01	-.03	-.02	0.03
PRC	Practical preference	.08	-.03	-.03	0.24 *
I	Sensitive	-.10	-.13	-.12	1.30
Multiple R = 0.3624				$100R^2 = 13.13$	
				$SD_y = 42.2$	

Table H. CVII: Relationships between Personality Factors and Attainment Average in High Ability Students

		Dependent Variable = AA			
N = 477		Simple Corr. Coeff. r	Normalized Regr. Coeff. Beta	Partial Corr. Coeff. r _{12.3}	Coefficient of Contribution rB x 100
C	Calm	.07	-.04	-.03	0.28 *
R	Adjustment to Reality	.11	.13	.09	1.43
MCD	Mechanical/Medical pref.	.09	.09	.08	0.81
IF	Index of favourability	-.13	-.13	-.12	1.69
Q2	Resourceful	-.06	-.08	-.08	0.48
SOI	Social interest	-.06	-.06	-.06	0.36
SR	Social relations	.02	-.06	-.05	0.12 *
B	Bright	-.07	-.03	-.03	0.21
Q4	Tense	-.04	-.06	-.06	0.24
AGC	Attitude - general commitment	-.06	-.04	-.04	0.24
PTA	Perception teacher attitudes	-.01	.03	.03	0.03
PRC	Practical preference	.06	.05	.04	0.30
I	Sensitive	.14	.15	.15	2.10
Multiple R = 0.2731				100R ² = 7.46	
				SD _y = .39.12	

APPENDIX I

TABLES OF REGRESSION ANALYSES
ON A SELECTED INTELLECTIVE OUTCOME
USING ALL COMBINATIONS OF PREDICTOR SETS

Table I. CVIII: Relationships between Home Environment Indicators and Attainment Average

		Dependent Variable = AA			
N = 1766		Simple Corr. Coeff. r	Normalized Regr. Coeff. Beta	Partial Corr. Coeff. r _{12.3}	Coefficient of Contribution rB x 100
UR	Urban residence	-.06	-.06	-.06	0.36
FED	Fathers education	-.06	-.07	-.07	0.42
NSSA	Non-state primary	.11	.11	.11	1.21
FMS	Family size	.08	.05	.05	0.40
FPH	Father absent	.06	.06	.06	0.36
FPA	Father deceased	.07	.07	.07	0.49
FRM	Respect from mother	.03	.02	.02	0.06
RPM	Respect for mother	.04	.04	.03	0.16
PA3	Parent attitude - non-smoking	-.05	-.06	-.06	0.30
PA4	Parent attitude - chores	-.08	-.07	-.07	0.56
PPF1	Father support	-.03	.03	.02	0.09 *
PPF2	Father angry rejection	.01	-.04	-.02	0.04 *
PPF3	Father permissive/non-intrusive	-.01	-.01	-.01	0.01
PPF4	Father anxiety-sensitivity	.05	.08	.05	0.40
PPM1	Mother support	-.02	-.07	-.05	0.14
PPM4	Mother anxiety-sensitivity	.01	-.04	-.03	0.04 *
PPM5	Mother demand	.10	.10	.10	1.00
Multiple R = 0.2411		100R ² = 5.81 SD _y = 74.8			

Table I. CIX: Relationships between Intellective Factors and Attainment Average

		Dependent Variable = AA			
N = 1766		Simple Corr. Coeff. r	Normalized Regr. Coeff. Beta	Partial Corr. Coeff. r _{12.3}	Coefficient of Contribution rB x 100
DAV	Verbal Reasoning	-.50	-.28	-.23	14.00
DAL	Language Usage	-.41	-.09	-.08	3.69
DAA	Abstract Reasoning	-.36	-.12	-.12	4.32
DAN	Numerical Reasoning	-.46	-.20	-.18	9.20
Multiple R = 0.5549		100R ² = 30.8 SD _y = 63.9			

Table I. CX: Relationships between Personality Factors and Attainment Average

		Dependent Variable = AA			
N = 1766		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$r_B \times 100$
R	Adjustment to Reality	.20	.17	.12	3.40
FR	Family relations	.12	-.03	-.03	0.36 *
MCD	Mechanical/Medical pref.	.05	.04	.03	0.20
IF	Index of favourability	-.17	-.12	-.11	2.04
CL	Clerical preference	.02	.04	.03	0.08
SOI	Social interest	.08	.08	.08	0.64
SR	Social relations	.02	-.09	-.07	0.18 *
B	Bright	-.23	-.17	-.17	3.91
Q4	Tense	.01	-.03	-.03	0.03 *
AGC	Attitude - general commitment	-.07	-.03	-.03	0.21
SCI	Science preference	-.23	-.20	-.17	4.60
CMP	Computational preference	-.08	-.10	-.08	0.80
A	Sociable	-.08	-.10	-.08	0.80
PRC	Practical interest	.11	-.07	-.06	0.77 *
I	Sensitive	-.01	-.02	-.02	0.02
C	Calm	.13	-.05	-.04	0.65 *
PTA	Perception teacher attitude	-.13	-.06	-.06	0.78
Multiple R = 0.3874				$100R^2 = 15.01$ $SD_y = 71.05$	

Table I. CXII: Relationships of Intellective and Personality Factors with Attainment Average

		Dependent Variable = AA			
N = 1766		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$r_B \times 100$
R	Adjustment to reality	.20	.07	.06	1.40
FR	Family relations	.12	-.07	-.06	0.84 *
IF	Index of favourability	-.17	-.09	-.10	1.53
CL	Clerical preference	.02	-.03	-.02	0.06 *
Q2	Resourceful	-.03	.03	.03	0.09 *
SOI	Social interest	.08	.06	.06	0.48
SR	Social relations	.02	-.05	-.05	0.10 *
SCI	Science preference	-.23	-.11	-.11	2.53
PTA	Perception teacher attitudes	-.13	-.06	-.07	0.78
CMP	Computational preference	-.07	-.06	-.05	0.42
A	Sociable	-.08	-.02	-.02	0.16
PRC	Practical preference	.11	-.10	-.10	1.10 *
I	Sensitive	-.01	-.01	-.01	0.01
C	Calm	.13	-.02	-.01	0.26 *
DAL	Language Usage	-.41	-.11	-.09	4.51
DAA	Abstract Reasoning	-.36	-.12	-.12	4.32
DAN	Numerical Reasoning	-.46	-.17	-.16	7.82
DAV	Verbal Reasoning	-.50	-.26	-.21	13.00
Multiple R = 0.5863				$100R^2 = 34.38$	
				$SD_y = 62.5$	

Table I. CXIII: Relationships of Home Environment and Personality Factors with Attainment Average

		Dependent Variable = AA			
N = 1766		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	rB x 100
R	Adjustment to reality	.20	.14	.10	2.80
FR	Family relations	.12	.02	.01	0.24
MCD	Mechanical/Medical pref.	.05	.02	.02	0.10
IF	Index of favourability	-.17	-.11	-.11	1.87
CL	Clerical preference	.02	.06	.04	0.12
SOI	Social interest	.08	.05	.05	0.40
SR	Social relations	.02	-.10	-.08	0.20
B	Bright	-.23	-.17	-.18	3.91
Q4	Tense	.01	-.03	-.04	0.03 *
AGC	Attitude - general commitment	-.07	-.02	-.02	0.14
SCI	Science preference	-.23	-.19	-.17	4.37
PTA	Perception teacher attitudes	-.13	-.06	-.06	0.78
CMP	Computational preference	-.08	-.10	-.08	0.80
A	Sociable	-.08	-.08	-.07	0.64
PRC	Practical preference	.11	-.05	-.04	0.55 *
I	Sensitive	-.01	-.01	-.01	0.01
C	Calm	.13	-.03	-.02	0.39 *
FED	Fathers education	-.06	-.04	-.05	0.24
UR	Urban residence	-.06	-.06	-.06	0.36
NSSA	Non-state primary	.11	.12	.12	1.32
FMS	Family size	.08	.03	.04	0.24
FPH	Father absent	.06	.03	.04	0.18
FPA	Father deceased	.07	.07	.08	0.49
FRM	Respect from mother	.03	.02	.01	0.06
RPM	Respect for mother	.04	.04	.03	0.16
PA5	Parent attitude - companionship	.03	.02	.02	0.06
PA3	Parent attitude - non-smoking	-.05	-.03	-.04	0.15
PA4	Parent attitude - chores	-.08	-.03	-.02	0.24
PPF1	Father support	-.03	.05	.03	0.15 *
PPF2	Father angry rejection	.01	-.10	-.07	0.10 *
PPF3	Father permissive-non-intrusive	-.01	-.02	-.02	0.02
PPF4	Father anxiety-sensitivity	.05	.09	.07	0.45
PPM1	Mother support	-.02	-.03	-.02	0.06
PPM4	Mother anxiety-sensitivity	.01	-.07	-.06	0.07 *
PPM5	Mother demand	.10	.08	.07	0.80
Multiple R = 0.4436		$100R^2 = 19.68$ $SD_y = 69.4$			

Table I. CXIV; Total Effects of Home Environment, Intellective and Personality Factors on Attainment Average

		Dependent Variable = AA			
N = 1766		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	rB x 100
DAL	Language usage	-.41	-.11	-.09	4.51
R	Adjustment to reality	.20	.06	.05	1.20
FR	Family relations	.12	-.03	-.03	0.36 *
IF	Index of favourability	-.17	-.09	-.09	1.53
Q2	Resourceful	-.03	.02	.02	0.06 *
SOI	Social interest	.08	.04	.05	0.32
SR	Social relations	.02	-.06	-.05	0.12
B	Bright	-.23	-.01	-.01	0.23
SCI	Science preference	-.23	-.12	-.12	2.76
PTA	Perception teacher attitudes	-.13	-.06	-.07	0.78
CMP	Computational preference	-.08	-.07	-.08	0.56
A	Sociable	-.08	-.02	-.02	0.16
PRC	Practical preference	.11	-.09	-.08	0.99 *
I	Sensitive	-.01	-.01	-.01	0.01
UR	Urban residence	-.06	-.04	-.05	0.24
NSSA	Non-state primary	.11	.10	.11	1.10
FMS	Family size	.08	.01	.02	0.08
FPH	Father absent	.06	.02	.02	0.12
FPA	Father deceased	.07	.03	.04	0.21
PA5	Parent attitude - companionship	.03	.03	.03	0.09 *
PA3	Parent attitude - non-smoking	-.05	-.02	-.02	0.10
PPF1	Father support	-.03	.03	.03	0.09
PPF2	Father angry rejection	.01	-.06	-.05	0.06 *
PPF3	Father permissive-non-intrusive	-.01	-.02	-.02	0.02
PPF4	Father anxiety-sensitivity	.05	.06	.05	0.30
PPM1	Mother support	-.02	-.02	-.01	0.04
PPM4	Mother anxiety-sensitivity	.01	-.04	-.04	0.04 *
PPM5	Mother demand	.10	.05	.05	0.50
DAA	Abstract reasoning	-.36	-.11	-.12	3.96
DAN	Numerical reasoning	-.46	-.17	-.16	7.82
DAV	Verbal reasoning	-.50	-.24	-.20	12.00

Multiple R = 0.6028

 $100R^2 = 36.34$ $SD_y = 61.7$

APPENDIX J

TABLES OF REGRESSION ANALYSES
ON A SELECTED NON-INTELLECTIVE OUTCOME
USING ALL COMBINATIONS OF PREDICTOR SETS

Table J. CXV: Relationships between Home Environment Factors and Conformity Problems

		Dependent Variable = C			
N = 1766		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$rB \times 100$
UR	Urban residence	.14	.06	.07	0.84
FED	Fathers education	-.08	-.03	-.03	0.24
NSSA	Non-state primary	-.10	-.05	-.06	0.50
FMS	Family size	.12	.06	.07	0.72
FPH	Father absent	.08	.06	.07	0.48
FPA	Father deceased	.08	.07	.08	0.56
RPM	Respect for mother	-.23	-.02	-.02	0.46
PA5	Parent attitude - companionship	.02	-.03	-.04	0.06 *
PA1	Parent attitude - mobility	-.04	-.03	-.04	0.12
PA3	Parent attitude - non-smoking	-.04	-.04	-.05	0.16
PA4	Parent attitude - chores	-.23	-.06	-.07	1.38
PPF1	Father support	-.32	-.06	-.05	1.92
PPF2	Father angry rejection	.36	.15	.11	5.40
PPF3	Father permissive-non-intrusive	-.07	.04	.04	0.28 *
PPF4	Father anxiety-sensitivity	.28	.02	.01	0.56
PPM1	Mother support	-.39	-.22	-.17	8.58
PPM4	Mother anxiety-sensitivity	.37	.16	.15	5.92
PPM5	Mother demand	.09	.10	.11	0.90
Multiple R = 0.5345				$100R^2 = 28.57$ $SD_y = 3.7$	

Table J. CXVI: Relationships between Intellectualive Factors and Conformity Problems

		Dependent Variable = C			
N = 1766		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$rB \times 100$
DAV	Verbal reasoning	-.13	.02	.02	0.26 *
DAL	Language usage	-.15	-.07	-.06	1.05
DAA	Abstract reasoning	-.16	-.09	-.08	1.44
DAN	Numerical reasoning	-.18	-.11	-.09	1.98
Multiple R = 0.2043				$100R^2 = 4.17$ $SD_y = 4.3$	

Table J. CXVII: Relationships between Personality Factors and Conformity Problems

		Dependent Variable = C			
N = 1766		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$rB \times 100$
R	Adjustment to reality	.62	.39	.39	24.18
FR	Family relations	.67	.46	.48	30.82
IF	Index of favourability	-.24	-.09	-.12	2.16
Q2	Resourceful	-.08	.02	.03	0.16 *
SR	Social relations	.07	-.21	-.25	1.47 *
B	Bright	-.14	.03	.04	0.42 *
SCI	Science preference	-.16	-.05	-.06	0.80
PTA	Perception teacher attitudes	-.19	-.04	-.06	0.76
CMP	Computational preference	-.08	-.04	-.06	0.32
A	Sociable	-.02	.03	.04	0.06 *
PRC	Practical preference	.08	-.03	-.03	0.24 *
Multiple R = 0.7530				$100R^2 = 56.7$ $SD_y = 2.88$	

Table J. CXVIII: Relationships of Intellectualive and Home Environment Factors with Conformity Problems

		Dependent Variable = C			
N = 1766		Simple Corr. Coeff. r	Normalized Regr. Coeff. Beta	Partial Corr. Coeff. $r_{12.3}$	Coefficient of Contribution $r_B \times 100$
FED	Fathers education	-.08	-.01	-.01	0.08
UR	Urban residence	.14	.07	.08	0.98
NSSA	Non-state primary	-.10	-.05	-.06	0.50
FMS	Family size	.12	.06	.07	0.72
FPH	Father absent	.08	.05	.06	0.40
FPA	Father deceased	.08	.06	.07	0.48
FRM	Respect from mother	-.20	-.01	-.01	0.20
RPM	Respect for mother	-.23	-.03	-.03	0.69
PA5	Parent attitude - companionship	.02	-.03	-.03	0.06 *
PA1	Parent attitude - mobility	-.04	-.04	-.04	0.16
PA3	Parent attitude - non-smoking	-.04	-.04	-.05	0.16
PA4	Parent attitude - chores	-.23	-.05	-.05	1.15
PPF1	Father support	-.32	-.06	-.05	1.92
PPF2	Father angry rejection	.36	.15	.11	5.40
PPF3	Father permissive/non-intrusive	-.07	.04	.04	0.28 *
PPF4	Father anxiety-sensitivity	.28	.01	.01	0.28
PPM1	Mother support	-.39	-.21	-.16	8.19
PPM4	Mother anxiety-sensitivity	.37	.16	.15	5.92
PPM5	Mother demand	.09	.10	.10	0.90
DAA	Abstract reasoning	-.16	-.06	-.06	0.96
DAN	Numerical reasoning	-.18	-.05	-.05	0.90
DAV	Verbal reasoning	-.13	-.04	-.03	0.52
Multiple R = 0.5461				$100R^2 = 29.8$	
				$SD_y = 3.68$	

Table J. CXIX: Relationships of Intellective and Personality Factors with Conformity Problems

		Dependent Variable = C			
N = 1766		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$rB \times 100$
R	Adjustment to reality	.62	.40	.39	24.80
FR	Family relations	.67	.46	.48	30.82
IF	Index of favourability	-.24	-.09	-.12	2.16
Q2	Resourceful	-.02	.02	.02	0.04 *
SR	Social relations	.07	-.22	-.25	1.54 *
B	Bright	-.14	.01	.01	0.14 †
SCI	Science preference	-.16	-.05	-.07	0.80
PTA	Perception teacher attitudes	-.19	-.04	-.06	0.76
CMP	Computational preference	-.08	-.04	-.06	0.32
A	Sociable	-.02	.02	.03	0.04 *
PRC	Practical preference	.08	-.02	-.03	0.16 *
DAL	Language usage	-.15	.02	.03	0.30 *
DAV	Verbal reasoning	-.13	.03	.03	0.39 †
Multiple R = 0.7540				$100R^2 = 56.85$	$SD_y = 2.87$

Table J. CXX: Relationships of Home Environment and Personality Factors with Conformity Problems

		Dependent Variable = C			
N = 1766		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$r_B \times 100$
R	Adjustment to reality	.62	.39	.39	24.18
FR	Family relations	.67	.37	.34	24.79
IF	Index of favourability	-.24	-.07	-.10	1.68
Q2	Resourceful	-.02	.02	.02	0.04 *
SR	Social Relations	.07	-.21	-.24	1.47
B	Bright	-.14	.02	.02	0.28 *
Q4	Tense	.14	.01	.01	0.14
AGC	Attitude - general commitment	-.10	.01	.01	0.10 *
SCI	Science preference	-.16	-.03	-.04	0.48
PTA	Perception teacher attitudes	-.19	-.04	-.06	0.76
CMP	Computational preference	-.08	-.04	-.06	0.32
A	Sociable	-.02	.03	.04	0.06 *
PRC	Practical preference	.08	-.03	-.04	0.24 *
I	Sensitive	.02	.01	.01	0.02
UR	Urban residence	.14	.05	.08	0.70
FED	Fathers education	-.08	-.01	-.02	0.08
NSSA	Non-state primary	-.10	-.04	-.05	0.40
FMS	Family size	.12	.06	.08	0.72
FPA	Father deceased	.08	.04	.06	0.32
RPM	Respect for mother	-.23	-.02	-.02	0.46
PA5	Parent attitude - companionship	.02	-.03	-.05	0.06 *
PA1	Parent attitude - mobility	-.04	-.01	-.02	0.04
PA4	Parent attitude - chores	-.23	-.03	-.04	0.69
PPF1	Father support	-.32	.02	.02	0.64 *
PPF2	Father angry rejection	.36	.03	.03	1.08
PPF3	Father permissive/non-intrusive	-.07	-.01	-.01	0.07
PPM1	Mother support	-.39	-.08	-.08	3.12
PPM4	Mother anxiety-sensitivity	.37	.04	.05	1.48
PPM5	Mother demand	.69	.03	.04	2.07

Multiple R = 0.7656

 $100R^2 = 58.6$
 $SD_y = 2.83$

Table J. CXXI: Relationships of Home Environment, Intellective and Personality Factors with Conformity Problems

		Dependent Variable = C			
N = 1776		Simple Corr. Coeff.	Normalized Regr. Coeff.	Partial Corr. Coeff.	Coefficient of Contribution
		r	Beta	$r_{12.3}$	$r_B \times 100$
R	Adjustment to reality	.62	.40	.40	24.80
FR	Family relations	.67	.37	.34	24.79
IF	Index of favourability	-.24	-.07	-.10	1.68
Q2	Resourceful	-.02	.01	.02	0.00*
SR	Social relations	.07	-.21	-.25	1.47*
AGC	Attitude - general commitment	-.10	.01	.01	0.10
SCI	Science preference	-.16	-.04	-.05	0.64
PTA	Perception teacher attitudes	-.19	-.04	-.05	0.76
CMP	Computational preference	-.08	-.04	-.06	0.32
A	Sociable	-.02	.03	.03	0.62*
PRC	Practical preference	-.08	-.03	-.03	0.24
DAL	Language usage	-.15	.03	.03	0.45*
FED	Fathers education	-.07	-.01	-.02	0.07
UR	Urban residence	.14	.05	.07	0.70
NSSA	Non-state primary	-.10	-.03	-.05	0.30
FMS	Family size	.12	.06	.08	0.72
FPA	Father deceased	.08	.04	.06	0.32
RPM	Respect for Mother	-.23	-.01	-.01	0.23
PA5	Parent attitude - companionship	.01	-.03	-.04	0.03*
PA1	Parent attitude - mobility	-.03	-.01	-.02	0.03
PA4	Parent attitude - chores	-.23	-.03	-.04	0.69
PPF1	Father support	-.32	.02	.02	0.64*
PPF3	Father permissive/non-intrusive	-.06	-.01	-.01	0.06
PPF2	Father angry rejection	.36	.02	.03	0.72
PPM1	Mother support	-.38	-.08	-.07	3.04
PPM4	Mother anxiety-sensitivity	.37	.04	.05	1.48
PPM5	Mother demand	.08	.03	.05	0.24
DAN	Numerical reasoning	-.17	.01	.01	0.07*
DAV	Verbal reasoning	-.13	.01	.01	0.13*
Multiple R = 0.7665				$100R^2 = 58.75$	
				$SD_y = 2.82$	

APPENDIX K

SUPPRESSOR VARIABLES AND THE COEFFICIENT OF CONTRIBUTION

Appendix K

SUPPRESSOR VARIABLES AND THE
COEFFICIENT OF CONTRIBUTION

The treatment of two major problems of multiple regression analysis - the suppressor variable, and the contribution of a predictor variable - requires some explanatory notice.

It has been shown by Keeves (1972) following Darlington* (1968) that a predictor may have a meaningful simple correlation with the criterion but in the regression equation appear to act in the opposite way. There are two ways in which this occurs:

1. The simple correlation between the predictor and the criterion is positive but the regression weight is negative.
2. The simple correlation is low and the regression weight is non-zero and of opposite sign.

In both cases the term suppressor variable is applied to the predictor to express the facts, first that in practice the variable is not serving as a consistent predictor, secondly, that it is difficult to interpret. Two procedures may be adopted: the suppressor variable may be removed from the analysis; or it may be allowed to remain but its function is noted in discussion. The first procedure is simpler, but runs some risk of loss of valuable information. The second would be adopted where there was reason to believe that serious loss of information could follow from removal of the variable.

Other preliminary procedures could, logically, remove some of the possibility of the appearance of 'nuisance-type' suppressors. In particular, these would be: (1) the adoption of a significance test as a criterion for entry and removal of predictors which will result in the inclusion only of those predictors which have a relationship of meaningful strength with the criterion; (2) the prior identification of relatively independent predictors by their selection from different factors extracted from a matrix of potential predictor variables.

In view of the fact that a repetitive use of the same set of predictors with different criterion variables was necessary for the present study, and since the acceptance-removal criteria and the prior factorial identification of dominant predictor variables had been adopted, it was decided that any suppressor variables should not be removed.

* Darlington, R.B. Multiple regression in psychological research and practice. Psychological Bulletin, 69, 3, 161-182, 1968.

While suppressor variables remain in the regression analyses and are presented in the tables, their identity changes with different criteria. Accordingly they are asterisked for the reader's benefit and where necessary their function mentioned.

A further result of the retention of the suppressor variables is the loss of some identity of the sum of the contributions of the individual predictors with the total prediction obtained from the multiple correlation.

This problem becomes clearer when the method of estimating the contribution of individual predictors is examined. Hays (1963,p571) observes that in K-variable problems of multiple correlation, the squared value of the multiple correlation, which is the correlation of predicted and obtained scores for variable X_1 , is

$$R^2_{1.2....K} = (b_{12.3....K})r_{12} + \dots + (b_{1K.2....K-1})r_{1K}$$

which means "the weighted sum of the correlation coefficients of each variable with variable 1, each coefficient weighted by the regression weight applied to that variable in the regression equation." In Keeves (1972.p287) the term for R^2 as a derivative of the weighted sum of the correlation coefficients is $\sum rb$ where r is the simple correlation coefficient and b the standardized partial regression coefficient. The product of $r \times b$ is termed by Keeves the coefficient of contribution and as such represents the discrete, partial contributions of which R^2 is composed.

The point at which a systematic difference between the procedure in the present study and that of Keeves occurs is in the retention of the suppressor variable. Since the multiple correlation expresses the relationship between the predicted and obtained scores, it is implied that the identity of $\sum rb$ with R^2 depends upon both the simple r and b being of the same sign. If they are not, they will produce a negative coefficient of contribution. The consequence in practice will be that while the action of the suppressor variable decreases the accuracy of the regression equation and thus the strength of the relationship between predicted and observed scores (R), it will also add to the sum of rb products. Logically this means that the greater the number and magnitude of correlations with suppressor variables, the greater the discrepancy upward of simple $\sum rb$ with R^2 . If there were a great many such variables in any one analysis, obviously a re-run without the offending predictors would be indicated. Examination of the tables of regression analyses shows that - there is not a large proportion of suppressor variables in any one analysis, and that the coefficients

involved are nearly all quite small. It can also be ascertained that when the suppressor variables are excluded, the sum of $r \times b$ products closely approximates R^2 .

At this point, the overall argument for use of free-access step-wise regression analysis may be reviewed. In a situation in which it is not either apparent or hypothesized that there is a temporal sequence of predictor variables or that there is a causal relationship between predictor variables (these conditions suggesting stage regression analysis and path analysis respectively), then the predictor variables are assumed to have equal status. In this case the predictors have equal right of entry to the stepwise regression analysis; they compete for entry. The resulting regression coefficients are immediately informative in terms of relative strength of Beta weights and of partial regression coefficients. But in order to determine how much of the multiple determination coefficient (R^2) is contributed by the individual predictor it is obviously necessary to take account of both the simple correlation (r) and the independent relationship of the predictor with the criterion when the influence of the interrelationship of that predictor and other predictors is controlled, or partialled out. It is in this case that the standardized regression coefficient (b) or Beta provides the basis for the estimation of importance of the individual predictor.

APPENDIX L

BRIEF DESCRIPTION OF SCHOOLS
INVOLVED IN THE STUDY

School Name and TypeMakora College:

State coeducational

Wairarapa College:

State coeducational

Rathkeale College:Private non-sectarian
residential boys schoolSt. Josephs College:Catholic secondary
residential boys schoolSt. Matthews Collegiate:Anglican secondary
residential school for girlsSt. Brides College:Catholic secondary
residential school for girlsSolway College:Presbyterian secondary
residential school for girls

Appendix L: Fold-out page listing the
description of the schools.

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